Access DB# 16113

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: SHAMIM AHMED Examiner #: 75030 Date: 8/13/03
Art Unit: 1765 Phone Number 305-1929 Serial Number: 10/067,260
Mail Box and Bldg/Room Location: _____ Results Format Preferred (circle): PAPER DISK E-MAIL

If mor than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: planarization method using anisotropic wet metal etching

Inventors (please provide full names): Ching-yu chang

Earliest Priority Filing Date: 02/07/2002

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

pls. Look for the mixture of $H_2SO_4 + H_3PO_4 + HF$.
to etch/polish insulation layer.

****

STAFF USE ONLY	Type of Search		Vendors and cost where applicable	
Searcher: EA	NA Sequence (#)		STN	$72.73
Searcher Phone #:	AA Sequence (#)		Dialog	
Searcher Location:	Structure (#)		Questel/Orbit	
Date Searcher Picked Up:	Bibliographic	✓	Dr.Link	
Date Completed: 8-14-03	Litigation		Lexis/Nexis	
Searcher Prep & Review Time: 5	Fulltext		Sequence Systems	
~~Clerical Prep Time:~~	Patent Family		WWW/Internet	
Online Time: 65	Other		Other (specify)	

PTO-1590 (8-01)

216/95 96 99
438/692, 723, 733

WHAT IS CLAIMED IS:

1. A planarization method using anisotropic wet etching, which can be applied on a substrate having an insulating layer thereon, the insulating layer having trenches therein, comprising:

mixing H_2SO_4, H_3PO_4, HF and H_2O to form an etching solution; and

placing the substrate into the etching solution to make the etching solution pass the surface of the insulating layer at a flow rate to etch the insulating layer.

2. The planarization method of claim 1, wherein the concentration of the H_2SO_4 is about 98% by weight.

3. The planarization method of claim 1, wherein the concentration of the H_3PO_4 is about 85% by weight.

4. The planarization method of claim 1, wherein the concentration of the HF is about 1% by weight.

5. The planarization method of claim 1, wherein the volume ratio of H_2SO_4 and H_3PO_4 : HF is about 50 – 100 : 1.

6. The planarization method of claim 1, wherein the etching rate of the etching solution to an insulating layer with a planar surface is about 50 – 80 Å/min.

7. The planarization method of claim 1, wherein the insulating layer is a silicon oxide layer.

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BIBDATASHEET

Bib Data Sheet

CONFIRMATION NO. 6663

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/067,260	02/07/2002 RULE	216	1765	147268.00338

APPLICANTS

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Chun-Pei Wu, Nantou Hsien, TAIWAN;Huei-Huang Chen, Changhua, TAIWAN;
Samuel C. Pan, Hsinchu, TAIWAN;

** CONTINUING DATA **********

** FOREIGN APPLICATIONS **********

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 03/05/2002

		STATE OR	SHEETS	TOTAL	INDEPENDENT
Foreign Priority claimed	☐ yes ☐ no	COUNTRY	DRAWING	CLAIMS	CLAIMS
35 USC 119 (a-d) conditions met	☐ yes ☐ no ☐ Met after Allowance	TAIWAN	4	21	3
Verified and Acknowledged	Examiner's Signature Initials				

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WASHINGTON , DC
20090-7223

TITLE
Planarization method using anisotropic wet etching

FILING FEE RECEIVED 758	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____

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=> display history full l1-

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L1            1 SEA "SULFURIC ACID"/CN
                E PHOSPHORIC ACID/CN
L2            1 SEA "PHOSPHORIC ACID"/CN
                E HYDROFLUORIC ACID/CN
L3            1 SEA "HYDROFLUORIC ACID"/CN

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L5       132126 SEA L2 OR (PHOSPHORIC# OR ORTHOPHOSPHORIC#)(2A)ACID# OR
                H3PO4
L6       118803 SEA L3 OR HYDROGEN#(A)(FLUORIDE# OR MONOFLUORIDE#) OR
                HYDROFLUORIC#(2A)ACID# OR HF
L7       112815 SEA CMP OR C(W)M(W)P OR (CHEM# OR CHEMICAL?)(3A)(MECH#
                OR MECHANICAL?)(3A)POLISH? OR PLANAR?
L8       308777 SEA POLISH? OR BURNISH? OR FURBISH? OR SMOOTH? OR GRIND?
                OR BUFF OR BUFFS OR BUFFED OR BUFFING#
L9       211659 SEA (ETCH? OR PHOTOETCH? OR CHASE# OR CHASING# OR
                ENCHAS? OR ENGRAV? OR PHOTOENGRAV? OR EMBOSS? OR
                PHOTOEMBOSS? OR INCISE# OR INCISING# OR IMPRINT? OR
                IMPRESS? OR ENCAUSTIC?)/BI,AB
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L12         144 SEA L10 AND L8
L13         254 SEA L10 AND L9

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L16          60 S L12 AND L13
L17          66 SEA L12 AND L15
L18         114 SEA L13 AND L15
L19          22 SEA L17 AND L18
L20      875559 SEA (MIXT# OR MIXTURE? OR BLEND? OR ADMIX? OR COMMIX? OR
                IMMIX? OR INTERMIX? OR COMPOSIT? OR COMPN# OR COMPSN# OR
                FORMULAT? OR INTERSPER?)/TI
L21           6 SEA L16 AND L20
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L22          9 SEA L12 AND L20
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L24          4 SEA L17 AND L20
L25          9 SEA L18 AND L20
L26         56 SEA L11 OR L19 OR L21 OR L22 OR L23 OR L24 OR L25
L27         29 SEA L16 NOT L26

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=> d l26 1-56 cbib abs hitstr hitind

L26  ANSWER 1 OF 56  HCA  COPYRIGHT 2003 ACS on STN
139:76614  High surface quality GaN and GaN-like III-V nitride wafers and
     their fabricating method.  Xu, Xueping; Vaudo, Robert P. (USA).
     U.S. Pat. Appl. Publ. US 2003127041 A1 20030710, 19 pp.,
     Cont.-in-part of U.S. Ser. No. 877,437.  (English).  CODEN: USXXCO.
     APPLICATION: US 2002-272761 20021017.  PRIORITY: US 2001-877437
     20010608.
AB   This invention describes AlxGayInzN, wherein 0.ltoreq.x.ltoreq.1,
     0.ltoreq.y.ltoreq.1, 0.ltoreq.z.ltoreq.1, and x+y+z = 1,
     characterized by a root mean square surface roughness of <1 nm in a
     10.times.10 .mu.m2 area.  The AlxGayInzN may be as a wafer, which is
     chem. mech. polished (CMP)
     using a CMP slurry comprising abrasive particles, such as
     SiO2 or alumina, and an acid or a base.  High quality AlxGayInzN
     wafers can be fabricated by steps including lapping, mech.
     polishing, and reducing internal stress of said wafer by thermal
     annealing or chem. etching for further enhancement of its surface
     quality.  CMP processing may be usefully employed to
     highlight crystal defects of an AlxGayInzN wafer.
IT   7664-38-2, Phosphoric acid, uses
     7664-39-3, Hydrofluoric acid, uses
     7664-93-9, Sulfuric acid, uses
        (etchant; high surface quality GaN and GaN-like III-V nitride
        wafers and their fabricating method including step of
        chem. mech. polishing and etching)
RN   7664-38-2  HCA
CN   Phosphoric acid (7CI, 8CI, 9CI)  (CA INDEX NAME)
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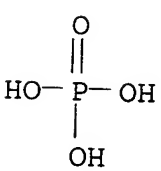
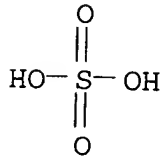


RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C30B001-00
NCL 117002000
CC 75-1 (Crystallography and Liquid Crystals)
IT Alcohols, uses
(amino, polishing agent; high surface quality GaN and GaN-like III-V nitride wafers and their fabricating method including step of **chem. mech. polishing**)
IT **Polishing**
(**chem.-mech.**; high surface quality GaN and GaN-like III-V nitride wafers and their fabricating method including step of **chem. mech. polishing**)
IT Hydroxides (inorganic)
(polishing agent; high surface quality GaN and GaN-like III-V nitride wafers and their fabricating method including step of **chem. mech. polishing**)
IT 1310-65-2, Lithium hydroxide (LiOH) 1310-82-3, Rubidium hydroxide (RbOH) **7664-38-2, Phosphoric acid**, uses **7664-39-3, Hydrofluoric acid**, uses **7664-93-9, Sulfuric acid**, uses 7697-37-2, Nitric acid, uses 21351-79-1, Cesium hydroxide (CsOH)
(etchant; high surface quality GaN and GaN-like III-V nitride wafers and their fabricating method including step of **chem. mech. polishing** and etching)
IT 409-21-2, Silicon carbide, uses 7782-40-3, Diamond, uses 12069-32-8, Boron carbide
(lapping and polishing agent; high surface quality GaN and GaN-like III-V nitride wafers and their fabricating method including step of **chem. mech. polishing** and lapping)
IT 1310-58-3, Potassium hydroxide (KOH), uses 1310-73-2, Sodium hydroxide (NaOH), uses
(polishing agent, etchant; high surface quality GaN and GaN-like III-V nitride wafers and their fabricating method including step of **chem. mech. polishing** and etching)

IT 2782-57-2, Dichloroisocyanuric acid 7722-84-1, Hydrogen peroxide, processes
(polishing agent; high surface quality GaN and GaN-like III-V nitride wafers and their fabricating method including step of **chem. mech. polishing**)

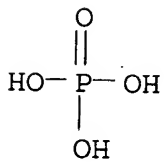
IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7664-41-7, Ammonia, uses
(polishing agent; high surface quality GaN and GaN-like III-V nitride wafers and their fabricating method including step of **chem. mech. polishing**)

L26 ANSWER 2 OF 56 HCA COPYRIGHT 2003 ACS on STN
138:410672 Design of a **chemical-mechanical polishing** slurry **composition** for **polishing** semiconductor wafers. Pasqualoni, Anthony Mark; Mahulikar, Deepak; Lafollette, Larry A.; Jenkins, Richard J. (Arch Specialty Chemicals, Inc., USA). U.S. Pat. Appl. Publ. US 2003104770 A1 20030605, 6 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-845549 20010430.

AB The invention relates to the design of a **chem.-mech. polishing** (**CMP**) slurry compn. for **polishing** semiconductor wafers. The slurry compn.consists of a dispersion soln. comprising an abrasive, and an oxidizer. The slurry compn. has a large particle count of <150,000 particles having a particle size >0.5 .mu.m in 30 .mu.L of slurry, which is achieved by filtering the slurry compn. prior to use. The inclusion of a chem. activity enhancer, such as an amine, and a corrosion inhibitor results in the appropriate copper removal rate without increasing static **etch** rates.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrofluoric acid**, processes
7664-93-9, **Sulfuric acid**, processes
(pH adjuster; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)

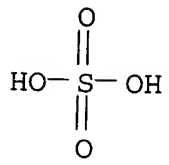
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM B24B001-00
ICS B24B007-19
NCL 451060000
CC 76-14 (Electric Phenomena)
ST **chem mech polishing** slurry compn semiconductor wafer
IT **Polishing**
(**chem.-mech.**; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)
IT Carboxylic acids, uses
(corrosion inhibitor; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)
IT Abrasives
Chelating agents
Corrosion inhibitors
Oxidizing agents
Slurries
Stabilizing agents
Surfactants
(design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)
IT Salts, uses
(design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)
IT Disperse systems
(of abrasive; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)
IT Fluorides, uses
(org.; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)
IT Quaternary ammonium compounds, processes
(oxidizing agent; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)
IT Tannins
(pyrocatechoic acid, pH adjuster; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)
IT 1306-38-3, Ceria, uses 1344-28-1, Alumina, uses
(abrasive; design of a **chem.-mech.**

polishing slurry compn. for **polishing** semiconductor wafers)

IT 102-71-6, Triethanolamine, processes 103-76-4, 1-Piperazineethanol 111-42-2, Diethanolamine, processes 141-43-5, Monoethanolamine, processes 929-06-6, Diethyleneglycolamine 7664-41-7, Ammonia, processes 7803-49-8, Hydroxylamine, processes
(chem. activity enhancer; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)

IT 7631-86-9, Silica, uses
(colloidal, abrasive; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)

IT 95-14-7, 1H-Benzotriazole 136-85-6, 6-Tolyltriazole 152275-68-8, 1-(2,3-Dicarboxypropyl)benzotriazole
(corrosion inhibitor; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)

IT 1314-34-7, Vanadium trioxide 7681-52-9, Sodium hypochlorite 7722-64-7, Potassium permanganate 7722-84-1, Hydrogen peroxide, processes 7727-54-0, Ammonium persulfate 7758-01-2, Potassium bromate 7758-05-6, Potassium iodate 7778-50-9, Potassium dichromate 7778-54-3, Calcium hypochlorite 7778-66-7, Potassium hypochlorite 7790-92-3, Hypochlorous acid 10233-03-1, Magnesium hypochlorite 10421-48-4, Ferric nitrate 13746-66-2, Potassium ferricyanide
(oxidizing agent; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)

IT 50-21-5, Lactic acid, processes 64-18-6, Formic acid, processes 64-19-7, Acetic acid, processes 77-92-9, Citric acid, processes 79-09-4, Propanoic acid, processes 87-69-4, Tartaric acid, processes 88-99-3, Phthalic acid, processes 107-92-6, Butanoic acid, processes 109-52-4, Pentanoic acid, processes 111-14-8, Heptanoic acid 112-05-0, Nonanoic acid 124-07-2, Octanoic acid, processes 142-62-1, Hexanoic acid, processes 149-91-7, Gallic acid, processes 526-95-4, Gluconic acid 6915-15-7, Malic acid 7647-01-0, Hydrochloric acid, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrofluoric acid**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 35914-36-4, Pyrogallol carboxylic acid
(pH adjuster; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)

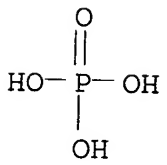
IT 78-10-4, TEOS 7429-90-5, Aluminum, processes 7440-25-7, Tantalum, processes 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes 7440-50-8, Copper, processes
(**polished** surface; design of a **chem.-mech. polishing** slurry compn. for **polishing** semiconductor wafers)

L26 ANSWER 3 OF 56 HCA COPYRIGHT 2003 ACS on STN
138:77217 Glass-**etching compositions**, surface treatment of sandblasted glass articles, and treatment of **etching** wastewater. Miwa, Hiroshi (Japan). Jpn. Kokai Tokkyo Koho JP 2003002685 A2 20030108, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-191115 20010625.

AB The compns. comprise fluoride, acid, **water**, and **water**-compatible org. solvent. The compns. may contain a gelation agent, a surfactant, sucrose (as stabilizer), and/or dye (as indicator for wastewater treatment). The sandblasted surfaces of the glass articles, which may have flat, curved, tubular, or any shape, are treated by the harmless **etching** compns. to make translucent and glossy surfaces. On treatment of the **etching** wastewater with an **aq**. soln. contg. NaOH, Na2CO3, CaCl2, or Ca(OH)2; a pH indicator or an alk. soln.-contg. container with a mark indicating the max. neutralizable amt. of the wastewater is used.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(**etchant**; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

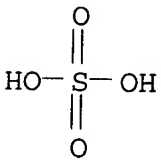
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C03C015-00
ICS B44C001-22; B44F001-02; C03C019-00
CC 57-1 (Ceramics)

Section cross-reference(s): 60

ST sandblasted glass **etching** compn harmless; fluoride acid **wat r** solvent glass **etchant**; glass **etching** wastewater treatment neutralization indicator container

IT Gelation agents
Surfactants
(**etching** compns. contg.; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Acids, uses
Fluorides, uses
(**etching** compns. contg.; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Glycols, uses
(ethers, solvent; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Glues
Gums and Mucilages
(gelling agent; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Bentonite, uses
Gelatins, uses
Glass powders
Silica gel, uses
Smectite-group minerals
(gelling agent; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Ethers, uses
(glycol, solvent; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT **Etching**
(harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Glass, processes
(harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Clay minerals
(hydrophilic, gelling agent; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Wastewater treatment
(neutralization; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Dyes
(pH indicator, **etching** compns. contg.; harmless compns. for **etching** of sandblasted glass articles and treatment

of **etching** wastewater)

IT Alcohols, uses
Glycols, uses
Polyoxyalkylenes, uses
(solvent; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT Solvents
(**water**-compatible, org., **etching** compns. contg.; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT 64-19-7, Acetic acid, uses 77-92-9, Citric acid, uses 110-15-6, Succinic acid, uses 1333-83-1, Sodium hydrogenfluoride 1341-49-7, Ammonium hydrogenfluoride 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
7681-49-4, Sodium fluoride, uses 7697-37-2, Nitric acid, uses 7789-23-3, Potassium fluoride 7789-29-9, Potassium hydrogenfluoride 12125-01-8, Ammonium fluoride
(**etchant**; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT 1344-28-1, Aluminum oxide, uses 9000-01-5, Gum arabic 9000-30-0, Guar gum 9000-36-6, Gum karaya 9000-40-2, Locust bean gum 9000-65-1, Tragacanth gum 9002-18-0, Agar agar 9002-89-5, Poly(vinyl alcohol) 9003-05-8, Polyacrylamide 9003-20-7, Polyvinyl acetate 9003-39-8, Poly(vinylpyrrolidone) 9004-32-4, Sodium carboxymethylcellulose 9004-62-0, Hydroxyethylcellulose 9004-64-2, Hydroxypropyl cellulose 9004-65-3, Hydroxypropylmethylcellulose 9004-67-5, Methyl cellulose 9004-70-0, Cellulose nitrate 9005-25-8, Starch, uses 9005-38-3, Sodium alginate 9046-40-6, Pectic acid 11078-30-1, Galactomannan 11138-66-2, Xanthan gum 12173-47-6, Hectorite 25751-21-7, Acrylic acid-methacrylic acid copolymer 29132-58-9, Acrylic acid-maleic acid copolymer 37353-59-6, Hydroxymethyl cellulose 71010-52-1, Gellan gum 96949-21-2, Rhamsan gum 96949-22-3, Welan gum
(gelling agent; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT 497-19-8, Sodium carbonate, uses 1305-62-0, Slaked lime, uses 1310-73-2, Sodium hydroxide, uses 10043-52-4, Calcium chloride, uses
(neutralizing agent in wastewater treatment; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT 76-59-5, Bromothymol blue
(pH indicator; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT 50-70-4, Sorbitol, uses 56-81-5, Glycerin, uses 57-55-6, Propylene glycol, uses 64-17-5, Ethyl alcohol, uses 67-56-1,

Methyl alcohol, uses 67-63-0, Isopropyl alcohol, uses 71-23-8, n-Propyl alcohol, uses 71-36-3, N-Butylalcohol, uses 78-83-1, Isobutyl alcohol, uses 106-69-4, 1,2,6-Hexanetriol 107-21-1, Ethylene glycol, uses 109-86-4, Methyl glycol 110-63-4, 1,4-Butanediol, uses 110-80-5 111-46-6, Diethylene glycol, uses 111-77-3, Diethylene glycol monomethyl ether 111-90-0, Diethylene glycol monoethyl ether 112-34-5, Diethylene glycol monobutyl ether 463-57-0, Methylene glycol 504-63-2, 1,3-Propanediol 4407-89-0, Dimethylene glycol 5412-01-1, Diethylene glycol monoisopropyl ether 9015-98-9, Polymethylene glycol 25265-71-8, Dipropylene glycol 25322-68-3, Polyethylene glycol 29911-28-2 30025-38-8, Dipropylene glycol monoethyl ether 34590-94-8, Dipropylene glycol monomethyl ether 94247-68-4
(solvent; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT 57-50-1, Sucrose, uses
(stabilizer; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

IT 112-00-5, Dodecyltrimethylammonium chloride 112-02-7, Hexadecyltrimethylammonium chloride 112-03-8, Octadecyl trimethyl ammonium chloride 122-19-0, Octadecyl dimethylbenzyl ammonium chloride 139-08-2, Tetradecyl dimethylbenzyl ammonium chloride 1337-30-0, Sorbitan laurate 2016-54-8, Tetradecyl amine acetate 2190-04-7, Octadecyl amine acetate 7212-69-3, Dioleyl dimethyl ammonium chloride 8061-52-7, Calcium ligninsulfonate 9002-92-0, Poly(oxyethylene) lauryl ether 9004-98-2, Poly(oxyethylene) oleyl ether 9005-00-9, Poly(oxyethylene) stearyl ether 9005-64-5, Polyoxyethylenesorbitan monolaurate 9005-65-6, Polyoxyethylenesorbitan monooleate 9005-66-7, Polyoxyethylenesorbitan monopalmitate 9005-67-8, Polyoxyethylenesorbitan monostearate 9016-45-9, Polyoxyethylene nonylphenyl ether 9063-89-2, Poly(oxyethylene) octylphenyl ether 25155-30-0, Sodium dodecylbenzenesulfonate 26266-57-9, Sorbitan palmitate 27613-77-0, Polyethylene glycol monoacetate 28299-33-4, Imidazoline 37318-79-9, Sorbitan oleate 56451-84-4, Sorbitan stearate
(surfactant; harmless compns. for **etching** of sandblasted glass articles and treatment of **etching** wastewater)

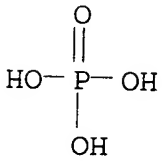
L26 ANSWER 4 OF 56 HCA COPYRIGHT 2003 ACS on STN
137:392453 Design of a **composite** glassy carbon disk substrate for magnetic recording materials. Jennings, Timothy Allan; Piltingsrud, Douglas Howard; Starcke, Steven F. (International Business Machines Corporation, USA). PCT Int. Appl. WO 2002095083 A1 20021128, 37 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU,

TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US42539 20011005. PRIORITY: US 2001-862552 20010522.

AB The invention relates to the design and fabrication of a composite glassy carbon disk with high temp. stability, surface uniformity, and specific stiffness, for use as a substrate for magnetic recording media. A glassy carbon layer is applied over a core composed of a ceramic, glass-ceramic, glass, polymer, or metal having high specific stiffness and temp. stability. The glassy carbon layer is formed by pyrolyzing a polymer precursor compn. applied over the core. The precursor compn. may be applied by a low-cost technique such as ultrasonic coating, airbrushing, or spin coating. After application of the precursor compn., the core is heated at a pyrolyzing temp. to form the glassy carbon layer. Before applying the precursor compn., the core is oxidized and/or **etched** and/or overcoated with a bonding layer to enhance the adhesion of the glassy carbon layer to the core. Prior to the deposition of a recording material by sputtering, the glassy carbon layer is **burnished** to remove glide defects.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrofluoric acid**, processes
7664-93-9, **Sulfuric acid**, processes
(**etchant**; design of a composite glassy carbon disk substrate for magnetic recording materials)

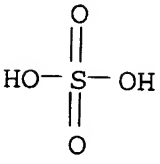
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C23C014-00

CC 77-8 (Magnetic Phenomena)
Section cross-reference(s): 42
IT Hydrocarbons, processes
(**burnishing** lubricant; design of a composite glassy carbon disk substrate for magnetic recording materials)
IT **Polishing**
(**burnishing**, of glassy carbon layer; design of a composite glassy carbon disk substrate for magnetic recording materials)
IT Actuators
Adhesives
Electric motors
Etching
Lubricants
Magnetic memory devices
Thermal decomposition
Transducers
(design of a composite glassy carbon disk substrate for magnetic recording materials)
IT Oxidation
Polishing
(of substrate prior to polymer deposition; design of a composite glassy carbon disk substrate for magnetic recording materials)
IT 463-79-6, Carbonic acid, processes 1305-62-0, Calcium hydroxide, processes 1310-58-3, Potassium hydroxide, processes 1310-65-2, Lithium hydroxide 1310-73-2, SODIUM HYDROXIDE, processes 1336-21-6, Ammonium hydroxide 2466-09-3, PyroPhosphoric acid 5329-14-6, Sulfamic acid 7601-90-3, Perchloric acid, processes 7647-01-0, Hydrochloric acid, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrofluoric acid**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 7738-94-5, Chromic acid (H2CrO4) 7782-77-6, Nitrous acid 7782-99-2, Sulfurous acid, processes 7790-92-3, HypoChlorous acid 13530-68-2, Chromic acid 13598-36-2, Phosphorous acid, processes 13898-47-0, Chlorous acid
(**etchant**; design of a composite glassy carbon disk substrate for magnetic recording materials)

L26 ANSWER 5 OF 56 HCA COPYRIGHT 2003 ACS on STN
137:344470 Preparation of silicon-on-insulator wafer using spin **etching** and a subsequent selective **etching** process. Lee, Seong-Eun; Oh, Seung-Jin; So, Sang-Mun; Kim, Heon-Do; Chung, Sung-Woong; Sohn, Hyun-Chul (Advanced Process Team, Memory R&D Division, Hynix Semiconductor Co., Ltd., Kyoungki-Do, 467-701, S. Korea). Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers, 41(8), 5024-5029 (English) 2002. CODEN: JAPNDE. Publisher: Japan Society of Applied Physics.
AB A novel thinning process is proposed for the prepn. of bonded and **etched** SOI (BE-SOI) wafers with high quality and good thickness uniformity by adopting a spin **etching** and subsequent selective **etching** as a thinning process. A

soln. comprising HNO3, **HF**, **H3PO4**, and **H2SO4** was used for the spin **etching** process. The spin **etching** process removed the damaged layer originating from a back-**grinding** process, which simultaneously yielded SOI wafers with better thickness uniformity than usual back-ground ones. Selective **etching** adopting a layer with high boron concn. as an **etch** stop layer was subsequently carried out to achieve better thickness uniformity than that obtained after the spin **etching** process. The soln. for the selective **etching** process was prepd. by dilg. NH4OH and H2O2 with de-ionized **water**. BE-SOI wafer with excellent surface roughness equiv. to that of a **polished** Si wafer could be prepd. by removing the surface layer of high boron concn. during a **chem. mech. polishing** (**CMP**) process.

CC 76-3 (Electric Phenomena)

ST silicon insulator wafer spin selective **etching**

IT **Etching**
(selective; prepn. of silicon-on-insulator wafer using spin **etching** and subsequent selective **etching** process)

IT **Etching**
(spin; prepn. of silicon-on-insulator wafer using spin **etching** and subsequent selective **etching** process)

IT SOI devices
(wafers; prepn. of silicon-on-insulator wafer using spin **etching** and subsequent selective **etching** process)

IT 7440-21-3, Silicon, uses
(prepn. of silicon-on-insulator wafer using spin **etching** and subsequent selective **etching** process)

L26 ANSWER 6 OF 56 HCA COPYRIGHT 2003 ACS on STN

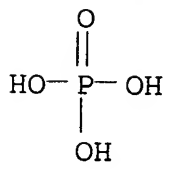
137:162719 Glass substrates for hard disks and their manufacture. Kurachi, Atsushi; Mitani, Kazuishi; Saito, Yasuhiro (Nippon Sheet Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002237030 A2 20020823, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-35608 20010213.

AB Glass substrates are precision **polished** with abrasives and then **etched** with mixed. solns. contg. .gtoreq.2 kinds of acids including **HF**. Optionally, the substrates are post treated with an alk. soln. and may furthermore be treated with an **aq**. soln. contg. **HF**. Thus manufd. substrates having multiple nos. of micro-protrusions are also claimed. Preferably, the glass substrates consist of SiO2 63-70, Al2O3 4-11, Li2O 5-11, Na2O 6-14, TiO2 0-5, ZrO2 0-2.5, MgO 0-6, CaO 1-9, SrO 0-3, and BaO 0-2 wt. (MgO + CaO + SrO + BaO 2-15 wt.%). Hard disks, comprising the substrates, are stably operated at small flying height.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses

7664-93-9, Sulfuric acid, uses
(**etchant**; manuf. of glass substrates for hard disks by precision **polishing** and **etching** in solns. contg. **HF**)

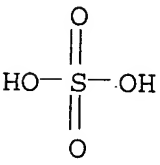
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM G11B005-84
ICS C03C003-087; C03C015-00; G11B005-73; C03C021-00
CC 77-8 (Magnetic Phenomena)
Section cross-reference(s): 74
ST hard disk glass substrate surface roughness; surface **polishing etching** glass substrate information recording; microprotrusion surface glass substrate magnetic disk
IT Aluminosilicate glasses
(alk. earth lithium sodium zirconium titanoaluminosilicate; manuf. of glass substrates for hard disks by precision **polishing** and **etching** in solns. contg. **HF**)
IT Aluminosilicate glasses
(calcium lithium magnesium sodium aluminosilicate; manuf. of glass substrates for hard disks by precision **polishing** and **etching** in solns. contg. **HF**)
IT Magnetic disks
(hard; manuf. of glass substrates for hard disks by precision **polishing** and **etching** in solns. contg. **HF**)
IT **Etching**
Glass substrates

Polishing
Surface roughness
(manuf. of glass substrates for hard disks by precision **polishing** and **etching** in solns. contg. **HF**)

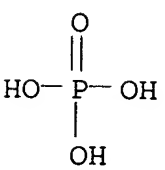
IT 75-59-2, Tetramethylammonium hydroxide 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrofluoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses 12125-01-8, Ammonium fluoride (**etchant**; manuf. of glass substrates for hard disks by precision **polishing** and **etching** in solns. contg. **HF**)

L26 ANSWER 7 OF 56 HCA COPYRIGHT 2003 ACS on STN
137:82518 Method for preparing decorative glass using glass **etching composition**. Miwa, Hiroshi (Japan). PCT Int. Appl. WO 2002053508 A1 20020711, 27 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP11408 20011225. PRIORITY: JP 2000-396498 20001227; JP 2001-299482 20010928.

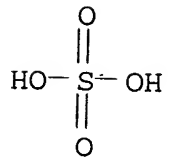
AB The glass **etching** compn. comprises 1-20 w/v % (preferably, 2-5 w/v %) of a fluoride, 20-80 vol./vol. % (preferably, 20-50 vol./vol. %) of **water** and 20-80 vol./vol. % (preferably, 50-80 vol./vol. %) of an org. solvent miscible with **water**, and optionally and an additive. The decorative glass having an arbitrary shape, such as a plane, a curved plane or a tube is formed by applying the **etching** compn. together with .gtoreq.1 kinds of soft pastes on its surface by utilizing the silk-screen process or the like. The glass **etching** compn. is free from the problems of the danger to a human body and environmental pollution.

IT **7664-38-2**, **Phosphoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses
(**etching** compn. contg.; method for prepg. decorative glass using glass **etching** compn.)

RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI). (CA INDEX NAME)



IC ICM C03C015-00
CC 57-1 (Ceramics)
Section cross-reference(s): 59
ST decorative glass **etching** compn fluoride
IT **Etching**
(**etchants**; method for prepg. decorative glass using glass **etching** compn.)
IT Confectionery
(frosting; method for prepg. decorative glass using glass **etching** compn.)
IT Glass, processes
(method for prepg. decorative glass using glass **etching** compn.)
IT Polyoxyalkylenes, uses
(solvent, **etching** compn. contg.; method for prepg. decorative glass using glass **etching** compn.)
IT 1333-83-1, Sodium **hydrogen fluoride** 1341-49-7, Ammonium **hydrogen fluoride** 7681-49-4, Sodium fluoride, processes 7789-23-3, Potassium fluoride 7789-29-9, Potassium **hydrogen fluoride** 12125-01-8, Ammonium fluoride 13826-83-0, Ammonium borofluoride (NH4BF4) 16919-19-0, Ammonium silicofluoride
(**etching** compn. contg.; method for prepg. decorative glass using glass **etching** compn.)
IT 57-50-1, Cane sugar, uses 64-19-7, Acetic acid, uses 77-92-9, Citric acid, uses 110-15-6, Succinic acid, uses 6915-15-7, Malic acid 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses
(**etching** compn. contg.; method for prepg. decorative glass using glass **etching** compn.)
IT 50-70-4, Sorbitol, uses 56-81-5, 1,2,3-Propanetriol, uses 57-55-6, 1,2-Propanediol, uses 64-17-5, Ethyl alcohol, uses 67-56-1, Methyl alcohol, uses 67-63-0, Iso-Propyl alcohol, uses 71-23-8, n-Propyl alcohol, uses 71-36-3, n-Butyl alcohol, uses 78-83-1, Iso-Butyl alcohol, uses 106-69-4, 1,2,6-Hexanetriol 107-21-1, 1,2-Ethanediol, uses 109-86-4, Ethylene glycol monomethyl ether 110-63-4, 1,4-Butanediol, uses 110-80-5, Ethylene glycol monoethyl ether 111-46-6, Diethylene glycol, uses 111-77-3, DiEthylene glycol monomethyl ether 111-90-0, DiEthylene glycol monoethyl ether 112-34-5, Diethylene glycol monobutyl ether

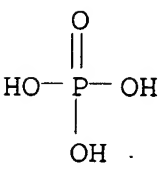
463-57-0, Methylene glycol 504-63-2, 1,3-Propanediol 4407-89-0, Dimethylene glycol 5412-01-1, Diethylene glycol monoisopropyl ether 9015-98-9, Polymethylene glycol 25265-71-8, Dipropylene glycol 25322-68-3, Polyethylene glycol 29911-28-2 30025-38-8, Dipropylene glycol monoethyl ether 34590-94-8, Dipropylene glycol monomethyl ether 94247-68-4, Propanol, 1(or 2)-[methyl-2-(1-methylethoxy)ethoxy]-
(solvent, **etching** compn. contg.; method for prepg. decorative glass using glass **etching** compn.)

L26 ANSWER 8 OF 56 HCA COPYRIGHT 2003 ACS on STN
136:394297 **Composition** and method for cleaning residual debris from semiconductor surfaces. Chen, Gary; Li, Li (Micron Technology, Inc., USA). U.S. US 6391794 B1 20020521, 10 pp. (English). CODEN: USXXAM. APPLICATION: US 2000-730769 20001207.

AB A method for removing a dielec. anti-reflective coating (DARC) of Si oxynitride material from a layer of insulative material which is formed over a substrate in a semiconductor device involves contacting the DARC material with a mixt. of Me4NF and .gtoreq.1 acid such as **HF**, HCl, HNO3, **H3PO4**, HOAc, citric **acid**, **sulfuric acid**, carbonic **acid** or ethylenediamine tetraacetic acid. Contact with the mixt. is for a time period sufficient to remove substantially all of the DARC material. The mixt. has a high **etch** rate selectivity such that the DARC coating can be removed with minimal effect on the underlying insulative layer.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
7732-18-5, **Water**, processes
(compn. and method for cleaning residual debris from semiconductor surfaces)

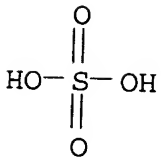
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



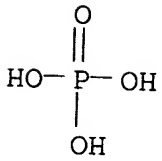
RN 7732-18-5 HCA
CN Water (8CI, 9CI) (CA INDEX NAME)

H_2O

IC ICM H01L021-302
NCL 438745000
CC 76-3 (Electric Phenomena)
IT 60-00-4, Ethylenediamine tetraacetic acid, processes 64-19-7, Acetic acid, processes 77-92-9, Citric acid, processes 373-68-2, Tetramethylammonium fluoride 463-79-6, Carbonic acid, processes 7647-01-0, Hydrogen chloride, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrogen fluoride**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes 7727-54-0, Ammonium persulfate **7732-18-5**, **Water**, processes 10028-15-6, Ozone, processes
(compn. and method for cleaning residual debris from semiconductor surfaces)

L26 ANSWER 9 OF 56 HCA COPYRIGHT 2003 ACS on STN
136:378921 Production of glass substrates for information recording disks. Saito, Yasuhiro; Mitani, Kazuishi; Kurachi, Atsushi (Nippon Sheet Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002150547 A2 20020524, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-337434 20001106.
AB In manuf. of the glass substrate, the following surface treatment is carried out; precision **polishing**, first washing with an **aq**. acidic soln. and an **aq**. alk. soln. to **etch** the surface and to remove abrasives buried in or adhered on the substrate, heat treatment to remove compressive stress at the substrate surface, and second washing with the same acidic- and alk. solns. The heat treatment may be carried in a molten salt to simultaneously carry chem. strengthening. The manufd. glass substrate shows high **smoothness** and cleanness.
IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrogen fluoride**, uses
7664-93-9, **Sulfuric acid**, uses
(**etching** soln.; prodn. of glass substrates for information recording disks by multi-step surface **smoothening**)

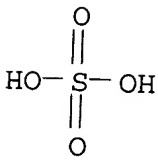
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM G11B005-84
ICS C03C021-00; C03C023-00
CC 77-8 (Magnetic Phenomena)
Section cross-reference(s): 74
ST information recording disk glass substrate surface **smoothening**; optical disk glass substrate surface **smoothening**; magnetic disk glass substrate surface **smoothening**; compressive stress removal recording disk glass substrate manuf; wet **etching** recording disk glass substrate manuf
IT Ion exchange
(of glass substrate for chem. strengthening; prodn. of glass substrates for information recording disks by multi-step surface **smoothening**)
IT **Etching**
Glass substrates
Magnetic disks
Optical disks
(prodn. of glass substrates for information recording disks by multi-step surface **smoothening**)
IT Aluminosilicate glasses
(prodn. of glass substrates for information recording disks by multi-step surface **smoothening**)
IT Heat treatment
(to remove compressive strength; prodn. of glass substrates for information recording disks by multi-step surface

smoothening)

IT 64-19-7, Acetic acid, uses 1310-73-2, Sodium hydroxide, uses 5329-14-6, Sulfamic acid 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrogen fluoride**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses (**etching** soln.; prodn. of glass substrates for information recording disks by multi-step surface **smoothening**)

IT 7631-99-4, Sodium nitrate, uses 7757-79-1, Potassium nitrate, uses (glass substrate-chem. strengthening molten salt component; prodn. of glass substrates for information recording disks by multi-step surface **smoothening**)

L26 ANSWER 10 OF 56 HCA COPYRIGHT 2003 ACS on STN

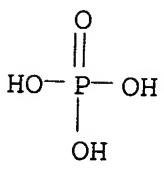
136:209068 **Etching compositions** for selective chemical mechanical **planarization** of copper, tantalum and tantalum nitride. Zhang, Fan; Towery, Daniel L.; Levert, Joseph A.; Mukherjee, Shyama P. (USA). U.S. Pat. Appl. Publ. US 2002020833 A1 20020221, 10 pp., Cont. of U.S. Ser. No. 357,264. (English). CODEN: USXXCO. APPLICATION: US 2000-745266 20001220. PRIORITY: US 1999-357264 19990719.

AB Formulations contg. oxidizing agents and coreactants are given for chem. mech. **planarization** or spin **etch** **planarization** of surfaces of Cu, Ta and TaN. The chem. formulations may optionally include abrasive particles which may be coated with a chem. reactive species. Contact or noncontact **CMP** may be performed with the present chem. formulations. Substantially 1:1 removal rate selectivity for Cu and Ta/TaN is achieved. Preferred compns. contain **H3PO4** 50-70, acetic acid 24-40, and HNO3 3-10 vol. parts and optionally 1-15 vol. parts concd. **HF**.

IT **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrogen fluoride**, processes **7664-93-9**, **Sulfuric acid**, processes (**etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)

RN 7664-38-2 HCA

CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)

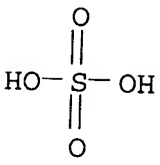


RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01B001-00
NCL 252500000
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66
ST chem mech **planarization** compn selective copper tantalum nitride; oxidant coreactant **etching** compn **planarization** copper tantalum nitride
IT Alcohols, processes
(aliph.; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT Surfactants
(anionic; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT Surfactants
(cationic; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT **Polishing**
(**chem.-mech.**, **planarization**; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT Carboxylic acids, processes
(dicarboxylic; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT Abrasives
Etching
Integrated circuits
Oxidizing agents
Stabilizing agents
Wetting agents
(**etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT Amines, processes
Glycols, processes
Phenols, processes
Transition metal salts
(**etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)

IT Hydrocarbons, processes
(fluoro, surfactants; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT Surfactants
(nonionic; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT Borides
Carbides
Fluorides, processes
Hydroxides (inorganic)
Metals, processes
Nitrides
Oxides (inorganic), processes
Polymers, processes
(particles; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT 1306-38-3, Cerium oxide (CeO2), processes
(abrasive particle coating; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT 64-19-7, Acetic acid, processes 67-56-1, Methanol, processes 71-23-8, Propanol, processes 87-69-4, Tartaric acid, processes 88-27-7, 2,6-Di-tert-butyl-4[(dimethylamino)methyl]phenol 107-21-1, Ethylene glycol, processes 119-47-1, Agidol-2 144-62-7, Oxalic acid, processes 288-36-8, 1,2,3-Triazole 288-88-0, 1H-1,2,4-Triazole 288-94-8, 1H-Tetrazole 1303-96-4, Borax 1310-73-2, Sodium hydroxide, processes 1319-77-3D, Hydroxytoluene, butylated 6915-15-7, Malic acid 7647-01-0, Hydrogen chloride, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrogen fluoride**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 7727-54-0, Ammonium peroxydisulfate ((NH4)2S2O8) 7733-02-0, Zinc sulfate (ZnSO4)
(**etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes 12033-62-4, Tantalum nitride (TaN)
(**etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)
IT 50-21-5, Lactic acid, uses 57-55-6, Propylene glycol, uses 60-00-4, EDTA, uses 62-76-0, Sodium oxalate 64-17-5, Ethanol, uses 68-04-2, Trisodium citrate 75-89-8 77-92-9, Citric acid, uses 89-65-6, Erythorbic acid 95-14-7, 1H-Benzotriazole 102-71-6, Triethanolamine, uses 104-75-6, 2-Ethylhexylamine 1310-58-3, Potassium hydroxide (KOH), uses 1333-39-7, Phenolsulfonic acid 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 1344-28-1, Alumina, uses 3251-23-8, Copper nitrate (Cu(NO3)2) 7439-98-7D, Molybdenum, salts 7440-25-7D, Tantalum, salts 7440-50-8D, Copper, salts 7447-39-4, Copper chloride (CuCl2), uses 7447-40-7, Potassium chloride (KCl), uses 7492-68-4, Copper

carbonate 7631-86-9, Silica, uses 7631-99-4, Sodium nitrate, uses 7705-08-0, Iron chloride (FeCl3), uses 7722-84-1, Hydrogen peroxide, uses 7758-89-6, Copper chloride (CuCl) 7758-98-7, Copper sulfate (CuSO4), uses 7772-99-8, Tin chloride (SnCl2), uses 7775-09-9, Sodium chlorate (NaClO3) 7775-27-1, Sodium peroxydisulfate (Na2S2O8) 8061-51-6, Sodium lignosulfonate 9002-89-5, Polyvinyl alcohol 9002-92-0, Poly(oxyethylene)lauryl ether 12125-01-8, Ammonium fluoride (NH4F) 14104-77-9, Iron nitrate 16731-55-8, Potassium pyrosulfite (K2S2O5) 17084-08-1, Hexafluorosilicate 26053-72-5, Diphenylsulfamic acid 27846-09-9, Iron chloride (FeCl) 31247-73-1, Ammonium copper chloride ((NH4)CuCl3)
(**etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)

IT 9004-32-4
(gelatinized; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)

IT 463-79-6D, Carbonic acid, salts
(particles; **etching** compns. for selective chem. mech. **planarization** of copper, tantalum and tantalum nitride)

L26 ANSWER 11 OF 56 HCA COPYRIGHT 2003 ACS on STN

136:176548 Slurry for **chemical mechanical polishing** of metal layer, method of preparing the slurry, and metallization method using the slurry. Lee, Jong-Won; Yoon, Bo-Un; Hah, Sang-Rok (S. Korea). U.S. Pat. Appl. Publ. US 20020019128 A1 20020214, 15 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-816365 20010326. PRIORITY: KR 2000-30800 20000605.

AB A slurry for use in **chem. mech. polishing** (**CMP**) of a metal layer. The **CMP** slurry includes an abrasive, a plurality of oxidizing agents, a stabilizer including an org. acid having a carboxyl group, a corrosion inhibitor which suppresses corrosion of a metal, a F compd. which reduces a difference in removal rates of a metal layer and a barrier layer, and deionized H2O. The plurality of oxidizing agents include a 2nd oxidizing agent which oxidizes the metal and a 1st oxidizing agent which restores an oxidizing ability of the 2nd oxidizing agent.

IT **7664-39-3, Hydrogen fluoride**, processes
(fluorine compd.; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)

RN 7664-39-3 HCA

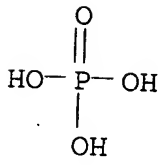
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

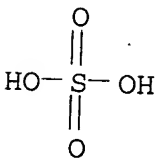
IT **7664-38-2, Phosphoric acid**, processes
7664-93-9, Sulfuric acid, processes
(pH adjusters; slurry for **chem. mech.**

polishing of metal layer, method of prepg. slurry, and metalization method using slurry)

RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-4763
NCL 438645000
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66
ST slurry **chem mech polishing** metal layer metalization; abrasive oxidizing agent corrosion inhibitor stabilizer slurry **CMP** metalization
IT **Polishing**
(**chem.-mech.**; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)
IT Coating process
(metalization; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)
IT Acids, processes
(org.; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)
IT Abrasives
Corrosion inhibitors
Oxidizing agents
Slurries
(slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)
IT 1306-38-3, Ceria, processes 1310-53-8, Germania, processes 1314-23-4, Zirconia, processes 1344-28-1, Alumina, processes 7631-86-9, Silica, processes 13463-67-7, Titania, processes
(abrasives; slurry for **chem. mech.**

polishing of metal layer, method of prepg. slurry, and metalization method using slurry)

IT 60-00-4, EDTA, processes
(and salts as corrosion inhibitors; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)

IT 7440-25-7, Tantalum, processes 7440-32-6, Titanium, processes 12033-62-4, Tantalum nitride 25583-20-4, Titanium nitride
(barrier layer; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)

IT 1341-49-7, Ammonium hydrogen difluoride **7664-39-3, Hydrogen fluoride**, processes 7681-49-4, Sodium fluoride, processes 7775-41-9, Silver fluoride 7789-23-3, Potassium fluoride 7789-29-9, Potassium hydrogen difluoride 12125-01-8, Ammonium fluoride 14075-53-7, Potassium tetrafluoroborate 16872-11-0, Fluoroboric acid 16961-83-4, Fluorosilicic acid 17439-11-1, Fluorotitanic acid
(fluorine compd.; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)

IT 7429-90-5, Aluminum, processes 7440-33-7, Tungsten, processes 7440-50-8, Copper, processes
(metal layer; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)

IT 94-36-0, Benzoyl peroxide, processes 1304-29-6, Barium peroxide 1305-79-9, Calcium peroxide 1313-60-6, Sodium peroxide 7722-84-1, Hydrogen peroxide, processes 10028-22-5, Ferric sulfate 10045-86-0, Ferric phosphate 10421-48-4, Ferric nitrate 13746-66-2, Potassium ferricyanide
(oxidizing agents; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)

IT 7647-01-0, Hydrochloric acid, processes **7664-38-2, Phosphoric acid**, processes **7664-93-9, Sulfuric acid**, processes 7697-37-2, Nitric acid, processes
(pH adjusters; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)

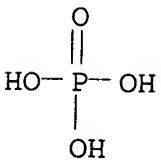
IT 50-21-5, Lactic acid, processes 64-18-6, Formic acid, processes 64-19-7, Acetic acid, processes 77-92-9, Citric acid, processes 79-14-1, Glycolic acid, processes 87-69-4, Tartaric acid, processes 88-99-3, Phthalic acid, processes 110-15-6, Succinic acid, processes 110-16-7, Maleic acid, processes 110-94-1, Glutaric acid 144-62-7, Oxalic acid, processes 6915-15-7, Malic acid
(stabilizers; slurry for **chem. mech. polishing** of metal layer, method of prepg. slurry, and metalization method using slurry)

L26 ANSWER 12 OF 56 HCA COPYRIGHT 2003 ACS on STN
136:176524 **Composition** for cleaning chemical mechanical **planarization** apparatus. Small, Robert J.; Lee, Joo-Yun (EKC Technology, Inc., USA). PCT Int. Appl. WO 2002013242 A2 20020214, 16 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US24515 20010803. PRIORITY: US 2000-632899 20000807.

AB The present invention relates to chem. compns. and methods of use for cleaning **CMP** equipment, including the interiors of delivery conduits carrying **CMP** slurry to the necessary sites. The chem. compns. of the present invention are also useful for post-**CMP** cleaning of the wafer itself. Three classes of cleaning compns. are described, all of which are **aq.** solns. One class operates in a preferable pH range from .apprx.11 to .apprx.12 and preferably contains .gtoreq.1 nonionic surfactants, .gtoreq.1 simple amines, a surfactant or sticking agent such as .gtoreq.1 sol. dialc. org. compds. and .gtoreq.1 quaternary amines. A 2nd class of cleaning compn. operates in a preferable pH range of .apprx.8.5 and contains citric acid and oxalic acid. A 3rd class of compns. is acidic, having a preferable pH range from .apprx.1.5 to .apprx.3, preferably contg. at least one oxidizing acid, at least one chelating agent, at least one sticking agent and at least one anionic surfactant. **HF** and KOH are substantially absent from the preferred compns. of the present invention. Some compns. of the present invention are advantageously used for cleaning the slurry distribution system of **CMP** app.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
(cleaning compn.; compn. for cleaning chem. mech. **planarization** app.)

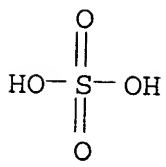
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-00
CC 76-3 (Electric Phenomena)
ST cleaning **chem mech polishing** app
IT Surfactants
(anionic; compn. for cleaning chem. mech. **planarization** app.)
IT **Polishing**
(app., cleaning of; compn. for cleaning chem. mech. **planarization** app.)
IT **Polishing**
(**chem.-mech.**; compn. for cleaning **chem.** mech. **planarization** app.)
IT Glycols, processes
Polyoxyalkylenes, processes
(cleaning compn.; compn. for cleaning chem. mech. **planarization** app.)
IT Chelating agents
Solutions
(compn. for cleaning chem. mech. **planarization** app.)
IT Amines, processes
Quaternary ammonium compounds, processes
(compn. for cleaning chem. mech. **planarization** app.)
IT Surfactants
(nonionic; compn. for cleaning chem. mech. **planarization** app.)
IT Cleaning
(of **chem.-mech. polishing** app.; compn. for cleaning chem. mech. **planarization** app.)
IT 144-62-7, Oxalic acid, processes
(cleaning compn. chelating agent; compn. for cleaning chem. mech. **planarization** app.)
IT 77-92-9, Citric acid, processes
(cleaning compn., chelating agent; compn. for cleaning chem. mech. **planarization** app.)
IT 50-21-5, Lactic acid, processes 57-55-6, Propylene glycol, processes 75-59-2, Tetramethyl ammonium hydroxide 107-21-1, Ethylene glycol, processes 141-43-5, Monoethanolamine, processes 1310-58-3, Potassium hydroxide, processes **7664-38-2**,

Phosphoric acid, processes **7664-39-3**,
Hydrogen fluoride, processes **7664-93-9**,
Sulfuric acid, processes 7697-37-2, Nitric acid,
processes 13465-08-2, Hydroxylamine nitrate 25322-68-3,
Polyethylene oxide 25322-69-4, Polypropylene oxide
(cleaning compn.; compn. for cleaning chem. mech.
planarization app.)

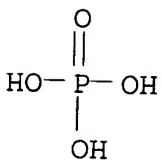
IT 107-54-0, 3,5-Dimethyl-1-hexyn-3-ol
(non-ionic surfactant for cleaning compn.; compn. for cleaning chem. mech. **planarization** app.)

L26 ANSWER 13 OF 56 HCA COPYRIGHT 2003 ACS on STN
136:127540 Ready-to-use stable **chemical-mechanical polishing** slurries. Pasqualoni, Anthony Mark; Mahulikar, Deepak (Arch Specialty Chemicals, Inc., USA). PCT Int. Appl. WO 2002004573 A2 20020117, 18 pp. DESIGNATED STATES: W: JP, KR, SG; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US10491 20010402. PRIORITY: US 2000-611702 20000708.

AB In accordance with the invention, there is provided a **chem.-mech. polishing** slurry for **polishing** a substrate, e.g., metal substrates on semiconductor wafers. The slurry is comprised primarily of abrasive particles (e.g., silica, alumina, or ceria) and an oxidizing agent (e.g., hydrogen peroxide, potassium ferricyanide, potassium dichromate, potassium iodate, potassium bromate, vanadium trioxide, hydochlorous acid, sodium hypochlorite, potassium hypochlorite, calcium hypochlorite, magnesium hypochlorite, ferric nitrate, ammonium persulfate, potassium permanganate), wherein the slurry exhibits a stability having a shelf life of at least 30 days.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(ready-to-use stable **chem.-mech. polishing** slurries for semiconductor wafers)

RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)

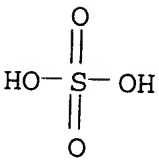


RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C09K
CC 76-3 (Electric Phenomena)
IT Fluorides, uses
(alkali and alk. earth; ready-to-use stable **chem.-mech. polishing** slurries for semiconductor wafers)
IT Semiconductor device fabrication
Surfactants
(ready-to-use stable **chem.-mech. polishing** slurries for semiconductor wafers)
IT Tannins
(ready-to-use stable **chem.-mech. polishing** slurries for semiconductor wafers)
IT 60-00-4, uses 67-43-6, Diethylenetriaminepentaacetic acid 139-13-9, Nitrilotriacetic acid 150-39-0, N-Hydroxyethylethylenediaminetriacetic acid 2068-72-6
(chelating agent; ready-to-use stable **chem.-mech. polishing** slurries for semiconductor wafers)
IT 95-14-7, 1H-Benzotriazole 136-85-6, 6-Tolyltriazole 152275-68-8, 1-(2,3,Dicarboxypropyl)benzotriazole
(corrosion inhibitor; ready-to-use stable **chem.-mech. polishing** slurries for semiconductor wafers)
IT 7727-54-0, Ammonium persulfate
(oxidant; ready-to-use stable **chem.-mech. polishing** slurries for semiconductor wafers)
IT 1314-34-7, Vanadium trioxide 7681-52-9, Sodium hypochlorite 7722-64-7, Potassium permanganate 7722-84-1, Hydrogen peroxide, reactions 7758-01-2, Potassium bromate 7758-05-6, Potassium iodate 7778-50-9, Potassium dichromate 7778-54-3, Calcium hypochlorite 7778-66-7, Potassium hypochlorite 7790-92-3, Hypochlorous acid 10233-03-1, Magnesium hypochlorite 10421-48-4, Ferric nitrate 13746-66-2, Potassium ferricyanide
(oxidant; ready-to-use stable **chem.-mech. polishing** slurries for semiconductor wafers)
IT 102-71-6, Triethanolamine, uses 103-76-4, 1-Piperazineethanol 111-42-2, Diethanolamine, uses 141-43-5, Monoethanolamine, uses 373-68-2, Tetramethylammonium fluoride 584-08-7, Potassium carbonate 877-24-7, Potassium hydrogen phthalate 929-06-6, Diethyleneglycolamine 1341-49-7, Ammonium bifluoride 6484-52-2, Ammonium nitrate, uses 7727-21-1, Potassium persulfate 7803-49-8, Hydroxylamine, uses 10039-54-0, Hydroxylamine sulfate

10117-38-1, Potassium sulfite 12125-01-8, Ammonium fluoride 57178-78-6 68444-11-1 130397-22-7, Perfluoric acid
(ready-to-use stable **chem.-mech.** **polishing** slurries for semiconductor wafers)

IT 50-21-5, Lactic acid, uses 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 77-92-9, Citric acid, uses 79-09-4, Propanoic acid, uses 87-69-4, Tartaric acid 88-99-3, Phthalic acid, uses 107-92-6, Butanoic acid, uses 109-52-4, Pentanoic acid, uses 111-14-8, Heptanoic acid 112-05-0, Nonanoic acid 124-07-2, Octanoic acid, uses 142-62-1, Hexanoic acid, uses 149-91-7, Gallic acid, uses 303-38-8 526-95-4, Gluconic acid 6915-15-7, Malic acid 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrofluoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses 35914-36-4, Pyrogallol carboxylic acid
(ready-to-use stable **chem.-mech.** **polishing** slurries for semiconductor wafers)

IT 1306-38-3, Ceria, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(ready-to-use stable **chem.-mech.** **polishing** slurries for semiconductor wafers)

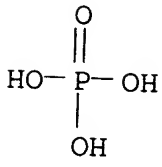
IT 1310-58-3, Potassium hydroxide, uses 1336-21-6, Ammonium hydroxide
(stabilizing agent; ready-to-use stable **chem.-mech.** **polishing** slurries for semiconductor wafers)

L26 ANSWER 14 OF 56 HCA COPYRIGHT 2003 ACS on STN
136:94475 **Compositions** for **etching** silicon with high selectivity to oxides and methods of using same. Lee, Whonchee; Pan, Pai; Gilton, Terry (USA). U.S. Pat. Appl. Publ. US 20020001968 A1 20020103, 10 pp. (English). CODEN: USXXCO. APPLICATION: US 1999-385197 19990830.

AB A Si **etching** method includes providing a substrate assembly including an exposed Si region and an exposed oxide region. An **etch** compn. including an NH4F component, an inorg. acid component, and an oxidizing agent is also provided. The **etch** compn. has a pH in the range of .apprx.7.0 to .apprx.8.0. The substrate assembly is exposed to the **etch** compn. Exposing the substrate assembly to the **etch** compn. may result in **etching** the exposed Si region at an **etching** rate that is .gtorsim.3 times the **etching** rate of the exposed oxide region and/or **etching** the Si region at an **etch** rate .gtorsim.9 .ANG./min. The **etching** method may be used in forming isolation structures. Further, **etch** compns. for performing the desired **etch** are provided.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
(**etchant**; compns. for **etching** silicon with high selectivity to oxides and methods of using same)

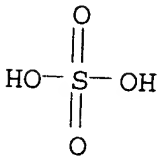
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



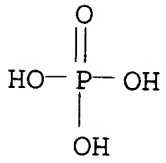
IC ICM H01L021-302
ICS H01L021-461
NCL 438745000
CC 76-3 (Electric Phenomena)
ST silicon silica selective **etching** ammonium fluoride
IT Oxidizing agents
(compns. for **etching** silicon with high selectivity to oxides and methods of using same)
IT **Etching**
(selective; compns. for **etching** silicon with high selectivity to oxides and methods of using same)
IT 12125-01-8, Ammonium fluoride (NH4F)
(compns. for **etching** silicon with high selectivity to oxides and methods of using same)
IT 7440-21-3, Silicon, processes 7631-86-9, Silica, processes
(compns. for **etching** silicon with high selectivity to oxides and methods of using same)
IT 64-19-7, Acetic acid, processes 463-79-6, Carbonic acid, processes 1336-21-6, Ammonium hydroxide 7647-01-0, Hydrogen chloride, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrogen fluoride**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes
(**etchant**; compns. for **etching** silicon with high selectivity to oxides and methods of using same)

L26 ANSWER 15 OF 56 HCA COPYRIGHT 2003 ACS on STN
136:91435 Method to restore hydrophobicity in dielectric films and materials. Hacker, Nigel P.; Thomas, Michael; Drage, James S. (Honeywell International, Inc., USA). PCT Int. Appl. WO 2002001621 A2 20020103, 34 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US19466 20010619. PRIORITY: US 2000-PV214219 20000623.

AB SiO2 dielec. films, whether nonporous foamed SiO2 dielecs. or nonporous SiO2 dielecs. are readily damaged by fabrication methods and reagents that reduce or remove hydrophobic properties from the dielec. surface. The invention provides for methods of imparting hydrophobic properties to such damaged SiO2 dielec. films present on a substrate. The invention also provides plasma-based methods for imparting hydrophobicity to both new and damaged SiO2 dielec. films. Semiconductor devices prepd. by the inventive processes are also provided.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrofluoric acid**, processes
7664-93-9, **Sulfuric acid**, processes
(etchant; method to restore hydrophobicity in dielec. films and materials)

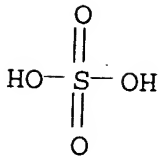
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



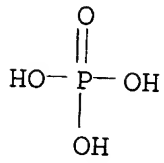
IC ICM H01L021-316
CC 66-6 (Surface Chemistry and Colloids)
Section cross-reference(s): 76
IT **Polishing**
(**chem.-mech.**; method to restore hydrophobicity in dielec. films and materials)
IT 60-00-4, processes 64-17-5, Ethanol, processes 64-18-6, Formic acid, processes 64-19-7, Acetic acid, processes 67-63-0, 2-Propanol, processes 68-12-2, Dimethylformamide, processes 75-59-2, Tetramethylammonium hydroxide 100-36-7, N,N-Diethylethylenediamine 107-15-3, Ethylenediamine, processes 111-40-0, Diethylenetriamine 121-44-8, Triethylamine, processes 127-19-5, Dimethylacetamide 141-43-5, Ethanolamine, processes 872-50-4, processes 1336-21-6, Ammonium hydroxide **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrofluoric acid**, processes **7664-93-9**, **Sulfuric acid**, processes 7803-49-8, Hydroxyl amine, processes 10581-12-1, Tetramethylammonium acetate 12125-01-8, Ammonium fluoride 14475-38-8, Silanol
(etchant; method to restore hydrophobicity in dielec. films and materials)

L26 ANSWER 16 OF 56 HCA COPYRIGHT 2003 ACS on STN
136:30363 Chemical-hydrodynamic **etching** for **planarization** of semiconductor wafers for integrated circuits. Levert, Joseph; Towery, Daniel; Zhang, Fan (Honeywell International Inc., USA). PCT Int. Appl. WO 2001094076 A1 20011213, 47 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US18218 20010605. PRIORITY: US 2000-590770 20000608.
AB The surface of integrated elec.-circuit wafer is **planarized** by non-contact means during fabrication by: (a) mounting the wafer in a suitable chuck or a rotary holder; (b) processing with a relative motion in proximity with (but not touching) an opposing surface; and (c) introduction of **etchant** chems. into the gap between the surfaces, for **etching** the wafer surface to

remove non-**planar** material in the gap nominally 1.0-100 .mu.m wide. The **etching** soln. optionally includes abrasive powders. The advantages of the process include decreasing the shear forces that tend to delaminate multilayer wafers. The **etching** baths without abrasive particles are suitable for recycling, or for disposal in environmentally satisfactory manner. The process is suitable for **planarization** of Cu-circuit surface with electropolishing and passivation in the presence of Ta and TaN, esp. using the soln. based on **aq.** H2O2, **H3PO4** (or **H2SO4**), and an org. addn. (esp, aliph. alc.).

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(**etching** bath contg.; chem. **etching** in **planarization** of mounted semiconductor wafers for integrated circuit)

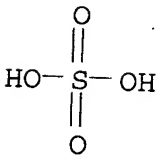
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM B24B049-00
ICS B24B049-14; B24B051-00; C23F001-02; C23F001-44; B05D003-00; B04B001-00
CC 76-2 (Electric Phenomena)
ST elec semiconductor wafer **planarization** acidic peroxide **etching**; copper surface **planarization** **etching** electropolishing
IT Passivation
(**etching** with; chem. **etching** in

planarization of mounted semiconductor wafers for integrated circuit)

IT Integrated circuits
(**planarization** of; chem. **etching** in **planarization** of mounted semiconductor wafers for integrated circuit)

IT **Polishing**
(**planarization**; chem. **etching** in **planarization** of mounted semiconductor wafers for integrated circuit)

IT **Etching**
(**polishing** and; chem. **etching** in **planarization** of mounted semiconductor wafers for integrated circuit)

IT Semiconductor materials
(**polishing** of; chem. **etching** in **planarization** of mounted semiconductor wafers for integrated circuit)

IT 144-62-7, Oxalic acid, uses 1336-21-6, Ammonium hydroxide 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrofluoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses 7705-08-0, Ferric chloride, uses 7722-84-1, Hydrogen peroxide, uses 7758-89-6, Copper monochloride
(**etching** bath contg.; chem. **etching** in **planarization** of mounted semiconductor wafers for integrated circuit)

IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes 12033-62-4, Tantalum nitride (TaN)
(**etching** of; chem. **etching** in **planarization** of mounted semiconductor wafers for integrated circuit)

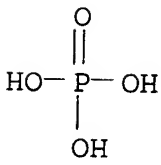
L26 ANSWER 17 OF 56 HCA COPYRIGHT 2003 ACS on STN
135:246110 Silicone **compositions** for VOC-free, non-flammable creams, pastes and powders to render nonporous surfaces **water**, soil and stain repellent. Ludwig, Jerome H. (Unelko Resource Development L.L.C., USA). PCT Int. Appl. WO 2001066480 A2 20010913, 67 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US6695 20010302. PRIORITY: US 2000-518033 20000303.

AB Silicone compns. consisting of a multiphase dispersion of a silicone, an acid, and a solid stabilizer are used for treating nonporous surfaces such as glass, porcelain, ceramic,

polished or painted metal, plastic, glazed ceramic tiles, and the like, to render them **water**, soil and stain repellent. The silicone fluid is selected from polydialkylpolysiloxanes, polyalkylpolyalkoxypolysiloxanes, polyalkylhydrogensiloxanes, polyalkyarylpolysiloxanes, fluoro-substituted alkylpolysiloxanes, cyclic siloxanes, and combinations thereof, and copolymers thereof. The acid is selected from **sulfuric acid**, sulfurous **acid**, **hydrofluoric acid**, hydrochloric **acid**, hydrobromic **acid**, **phosphoric acid**, phosphorous **acid**, pyrophosphoric acid, nitric acid, hydrogen sulfide, iodic acid, periodic acid, chromic acid, sulfamic acid, fluorosilicic acid, chlorosulfonic acid, fluorosulfonic acid, ammonium bifluoride, sodium bisulfate, mono-, di- and trichloroacetic acid, mono-, di- and trifluoroacetic acid, p-toluenesulfonic acid, benzenesulfonic acid, ethylsulfonic acid, methylsulfonic acid, ethylenedisulfonic acid, dodecylsulfonic acid, trifluoromethylsulfonic acid, perfluoroalkylcarboxylic acids, oleum, perfluoroalkylsulfonic acids, maleic acid, picric acid, trihydroxybenzoic acid, trinitrophenol and mixts. thereof. The solid stabilizer having a particle size of 5-50 .mu.m is selected from mica, hydrocarbon waxes, polyethylene, polypropylene, polytetrafluoroethylene, phenolic resins, polyvinyl chloride, cryst. graphite, amorphous graphite, carbon black, silicas, boron nitride, carnauba wax, glass microspheres, ceramic microspheres, perlite, vermiculite, talc and combinations thereof. Volatile org. compd. (VOC) free cream, paste, powder and solid compns. are provided by the inclusion of stabilizers in the silicone compns. Solventless silicone compns. provide numerous advantages and improved **water**/soil repellency qualities.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrofluoric acid**, processes
7664-93-9, **Sulfuric acid**, processes
(component of silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

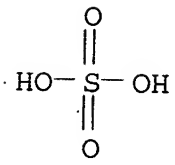
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C03C017-30
CC 57-3 (Ceramics)
Section cross-reference(s): 56
IT Polysiloxanes, processes
(F 1079; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Mica-group minerals, uses
(Mica 3X, Therm-O-Rock V 4, solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Perlite
(Thermolite T 100, Therm-O-Rock 68S, solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Perfluoro compounds
(alkanesulfonic acids, component of silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Sulfonic acids, processes
(alkanesulfonic, perfluoro, component of silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Cream
Pastes
Water-resistant materials
(based on silicone dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Perfluoro compounds
(carboxylic acids, alkyl derivs., component of silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Cyclosiloxanes
(component of silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Tiles
(glazed ceramic tiles; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)
IT Hydrocarbon waxes, uses

(microcryst., Wax 180, Wax 835, solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT Dispersion (of materials)
(multiphase dispersion based on silicone; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT Carboxylic acids, processes
(perfluoro, alkyl derivs., component of silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT Soils
(soil repellent paste; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT Carbon black, uses
Carnauba wax
Fluoropolymers, uses
Glass microspheres
Phenolic resins, uses
(solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT Stains, coloring materials
(stain repellent paste; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT Ceramics
Porcelain
(**water**/soil repellent paste for; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT Glass, processes
Metals, processes
Plastics, processes
(**water**/soil repellent paste for; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 9016-00-6, Poly[oxy(dimethylsilylene)]
(F 1006, solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 7782-42-5, G 146 (graphite), uses
(G 146, cryst. and amorphous, solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 42557-10-8
(SWS 101; solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 115839-81-1

(VS 7349, solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 75-75-2, Methylsulfonic acid 76-03-9, Trichloroacetic acid, processes 76-05-1, Trifluoroacetic acid, processes 88-89-1, Picric acid 98-11-3, Benzenesulfonic acid, processes 104-15-4, p-Toluenesulfonic acid, processes 110-04-3, Ethylenedisulfonic acid 110-16-7, Maleic acid, processes 594-45-6, Ethylsulfonic acid 1341-49-7, Ammonium bifluoride 1493-13-6, Trifluoromethylsulfonic acid 1510-16-3, Dodecylsulfonic acid 2466-09-3, Pyrophosphoric acid 5329-14-6, Sulfamic acid 7647-01-0, Hydrochloric acid, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrofluoric acid**, processes **7664-93-9**, **Sulfuric acid**, processes 7681-38-1, Sodium bisulfate 7697-37-2, Nitric acid, processes 7738-94-5, Chromic acid (H2CrO4) 7782-68-5, Iodic acid 7782-99-2, Sulfurous acid, processes 7783-06-4, Hydrogen sulfide, processes 7789-21-1, Fluorosulfonic acid 7790-94-5, Chlorosulfonic acid 8014-95-7, Oleum 10035-10-6, Hydrobromic acid, processes 13444-71-8, Periodic acid 13598-36-2, Phosphorous acid, processes 16961-83-4, Fluorosilicic acid 31900-57-9, Dimethylsiloxane polymer 87795-40-2, Trihydroxybenzoic acid
(component of silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 9003-07-0, PropylMatte 31
(micronized, PropylMatte 31, solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 13397-24-5, Gypsum, processes
(powder, solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 1318-00-9, vermiculite 9002-84-0, Polytetrafluoroethylene 9002-86-2, Polyvinyl chloride 10043-11-5, Boron nitride, uses 14807-96-6, talc, uses
(solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

IT 7631-86-9, Silcosil 90, processes 9002-88-4, MPP 611XF 31566-31-1, GMS 64060-15-7, Biosoft 100 105287-42-1, MP 22XF 155328-45-3, Reolosil MT-10 178234-88-3, W 1012 220356-38-7, W 1300
(solid stabilizer in silicone-based dispersion; silicone compns. for VOC-free, non-flammable creams and pastes as surface **water**, soil and stain repellent)

L26 ANSWER 18 OF 56 HCA COPYRIGHT 2003 ACS on STN
135:49899 **Composition** for frosting of glass, **etching** bath, process for frosting of glass, and translucent glass objects. Bessoles, Yves; Guy, Francois; Trouve, Gerard (Societe

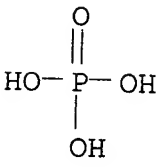
D'Exploitation De Produits Pour Les Industries Chimiques, S.E.P.P.I.C., Fr.). Eur. Pat. Appl. EP 1108773 A1 20010620, 13 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (French). CODEN: EPXXDW. APPLICATION: EP 2000-403097 20001108. PRIORITY: FR 1999-15887 19991216.

AB The compn. consists of 20-99 KHF2 and 1-80 wt.% **water**-sol. multivalent cation salt. Optionally, the compn. contains .ltoreq.15 wt.% NH4HF2. The compn. is dispersed in **water** or an **HF**-free acid soln. Glass treated in a bath becomes translucent and opaque.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(in **etching** bath for frosting of glass)

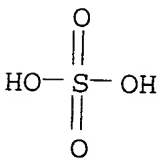
RN 7664-38-2 HCA

CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C09K013-08
ICS C03C015-02

CC 57-1 (Ceramics)
Section cross-reference(s): 49

ST glass frosting **etching** bath

IT **Etching**
(bath for frosting of glass)

IT Glass, processes
(**etching** bath for frosting of)

IT Decoration
Surface roughness
(**etching** bath for frosting of glass)

IT Surfactants
(in **etching** bath for frosting of glass)

IT Fatty acids, uses
Polyoxyalkylenes, uses
(in **etching** bath for frosting of glass)

IT 64-19-7, Acetic acid, uses 77-92-9, Citric acid, uses 79-09-4,

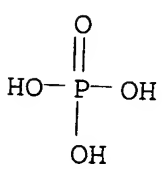
Propionic acid, uses 87-69-4, Tartaric acid, uses 110-15-6, Succinic acid, uses 144-62-7, Oxalic acid, uses 1314-13-2, Zinc oxide, uses 1332-37-2, Iron oxide, uses 1341-49-7, Ammonium **hydrogen fluoride** 1344-28-1, Alumina, uses 7447-40-7, Potassium chloride, uses 7447-41-8, Lithium chloride, uses 7487-88-9, Magnesium sulfate, uses 7647-01-0, Hydrochloric acid, uses 7647-14-5, Sodium chloride, uses **7664-38-2**, **Phosphoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses 7705-08-0, Iron chloride (FeCl3), uses 7757-82-6, Sodium sulfate, uses 7758-87-4, Calcium phosphate 7773-01-5, Manganese chloride 7778-18-9, Calcium sulfate 7778-80-5, Potassium sulfate, uses 7786-30-3, Magnesium chloride, uses 7789-21-1, Fluorosulfonic acid 7789-29-9, Potassium **hydrogen fluoride** 7789-75-5, Calcium fluoride, uses 9004-34-6, Cellulose, uses 9004-34-6D, Cellulose, derivs., uses 9005-25-8, Starch, uses 9005-53-2, lignin, uses 10043-52-4, Calcium chloride, uses 13397-24-5, Gypsum, uses 13462-86-7, Barite 13463-67-7, Titanium oxide, uses 16871-90-2, Potassium fluorosilicate 16893-85-9, Sodium fluorosilicate 16925-39-6, Calcium fluorosilicate 24969-07-1 25322-68-3, Ethylene oxide polymer 25322-69-4
(in **etching** bath for frosting of glass)

L26 ANSWER 19 OF 56 HCA COPYRIGHT 2003 ACS on STN
135:27890 **Chemical mechanical polishing** (**CMP**) of platinum layers on semiconductor substrates for high throughput. Sako, Yamato; Kubo, Tomio (Okamoto Machine Tool Works Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001160545 A2 20010612, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-342715 19991202.

AB The process uses **CMP** liqs. comprising **HF** and O-contg. compds. while applying elec. voltage between substrates and the liqs. existing between the substrates and polishing pads to generate O3 from the liqs. The voltage-applying electrodes may comprise ceramics, polymers, or activated C that are resistant to the **CMP** liqs.

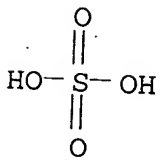
IT **7664-38-2**, **Phosphoric acid**, processes
7664-93-9, **Sulfuric acid**, processes
(polishing liqs. contg.; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)

RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3, Hydrofluoric acid**, processes
(**polishing** liqs.; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

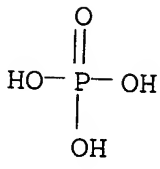
IC ICM H01L021-304
ICS H01L021-304; B24B037-00; H01L021-306
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 56
ST platinum semiconductor wiring **CMP** ozone accelerating; **hydrofluoric acid** ozone accelerated platinum **CMP**; leveling transistor platinum **chem mech polishing**
IT Semiconductor device fabrication
(O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
IT **Polishing**
(**chem.-mech.**; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
IT Transistors
(ferroelec. memory devices for; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
IT Ferroelectric memory devices
(transistors of; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
IT Ceramics
(voltage-applying electrodes; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
IT Polymers, uses
(voltage-applying electrodes; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
IT 7440-06-4, Platinum, processes
(O3-accelerated **chem. mech. polishing**

for rapid leveling of Pt layers in semiconductor devices)
IT 10028-15-6P, Ozone, processes
(O3-accelerated **chem. mech. polishing**
for rapid leveling of Pt layers in semiconductor devices)
IT 7440-44-0, Activated carbon, uses
(activated, electrodes; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
IT 64-19-7, Acetic acid, processes 77-92-9, Citric acid, processes 141-82-2, Malonic acid, processes 144-62-7, Oxalic acid, processes **7664-38-2, Phosphoric acid**, processes **7664-93-9, Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes 7732-18-5, Water, processes
(polishing liqs. contg.; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)
IT **7664-39-3, Hydrofluoric acid**, processes
(**polishing** liqs.; O3-accelerated **chem. mech. polishing** for rapid leveling of Pt layers in semiconductor devices)

L26 ANSWER 20 OF 56 HCA COPYRIGHT 2003 ACS on STN
134:347167 **Etching compositions**, design, and fabrication methods for manufacturing semiconductor devices. Kwag, Gyu-hwan; Ko, Se-jong; Hwang, Kyung-seuk; Gil, Jun-ing; Park, Sang-o; Kim, Dae-hoon; Chon, Sang-moon; Chung, Ho-kyoon (Samsung Electronics Co., Ltd., S. Korea). U.S. US 6232228 B1 20010515, 26 pp., Cont.-in-part of U.S. 6,140,233. (English). CODEN: USXXAM. APPLICATION: US 1999-325389 19990604. PRIORITY: KR 1998-24232 19980625; US 1998-109922 19980702; KR 1998-31544 19980803.
AB A method of manufg. semiconductor devices is provided, including the formation of a conductive plug and the minimizing of the step-height of an interlayer dielec. layer. An **etching** compn. is also provided for such a manufg. method. The method of manufg. semiconductor devices includes the steps of forming an insulating layer over a semiconductor substrate, forming contact holes in the insulating layer, forming a conductive layer over the insulating layer to burying the contact holes, rotating the semiconductor substrate, and **etching** the conductive layer by supplying an **etching** compn. on the rotating semiconductor substrate, and spin-**etching** the W layer using an **etching** compn. such that the conductive layer remains only inside the contact holes and does not remain over the insulating layer. The **etching** compn. includes at least one oxidant selected from H2O2, O2, IO4-, BrO3, ClO3, S2O8-, KIO3, H5IO6, KOH and HNO3, at least enhancer selected from **HF**, NH4OH, **H3PO4**, **H2SO4**, NH4F and HCl, and a buffer soln., mixed together in certain amts.
IT **7664-38-2, Phosphoric acid**, processes
7664-39-3, Hydrogen fluoride, processes
7664-93-9, Sulfuric acid, processes

(**etchant**; **etching** compns., design, and fabrication methods for manufg. semiconductor devices)

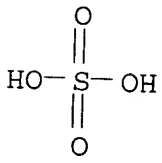
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-44
NCL 438669000
CC 76-3 (Electric Phenomena)
ST semiconductor device fabrication **etching** compn
IT Bromates
(**etchant**; **etching** compns., design, and fabrication methods for manufg. semiconductor devices)
IT Contact holes
Dielectric films
Electric insulators
Etching
Semiconductor device fabrication
(**etching** compns., design, and fabrication methods for manufg. semiconductor devices)
IT Borophosphosilicate glasses
Oxides (inorganic), uses
(**etching** compns., design, and fabrication methods for manufg. semiconductor devices)
IT Halogen compounds
Per compounds
(periodates, **etchant**; **etching** compns., design, and fabrication methods for manufg. semiconductor devices)
IT Electric contacts

(plugs; **etching** compns., design, and fabrication methods for manufg. semiconductor devices)

IT 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 12033-62-4, Tantalum nitride (TaN) 25583-20-4, Titanium nitride (TiN)
(device barrier layer; **etching** compns., design, and fabrication methods for manufg. semiconductor devices)

IT 7440-33-7, Tungsten, uses 7440-50-8, Copper, uses
(device conductive layer; **etching** compns., design, and fabrication methods for manufg. semiconductor devices)

IT 1310-58-3, Potassium hydroxide, processes 1336-21-6, Ammonium hydroxide 7647-01-0, Hydrogen chloride, processes
7664-38-2, Phosphoric acid, processes
7664-39-3, Hydrogen fluoride, processes
7664-93-9, Sulfuric acid, processes
7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes 7782-44-7, Oxygen, processes 10450-60-9, Periodic acid (H5IO6) 12125-01-8, Ammonium fluoride
(**etchant**; **etching** compns., design, and fabrication methods for manufg. semiconductor devices)

IT 78-10-4, Tetraethoxysilane
(**etching** compns., design, and fabrication methods for manufg. semiconductor devices)

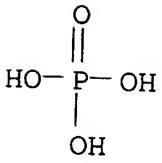
IT 7440-21-3, Silicon, uses
(polycryst.; **etching** compns., design, and fabrication methods for manufg. semiconductor devices)

L26 ANSWER 21 OF 56 HCA COPYRIGHT 2003 ACS on STN
134:196245 Surface treating **composition** for improving corrosion resistance and paint adhesion of galvanized steel sheets. Haruta, Yasuhiko; Nakano, Takashi; Kuwano, Eiji (Kansai Paint Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001049450 A2 20010220, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-66058 20000310. PRIORITY: JP 1999-156278 19990603.

AB The surface treating compn. contains **water** 1000, hydrazine deriv. 0.2-50, , and acid for **etching** of Zn 0.1-30 wt. parts. Surface treating compn. is coated at 20-100 mg/m2 as hydrazine deriv. on galvanized steel sheets and dried to improve the corrosion resistance and paint adhesion.

IT **7664-38-2, Phosphoric acid**, uses
7664-39-3, Hydrofluoric acid, uses
7664-93-9, Sulfuric acid, uses
(surface treating compns. contg. hydrazine deriv. and acid for improving corrosion resistance and paint adhesion of galvanized steel sheets)

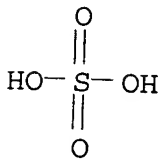
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



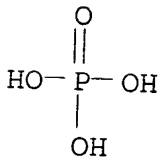
IC ICM C23C022-06
ICS C23C022-08
CC 55-6 (Ferrous Metals and Alloys)
IT 50-21-5, Lactic acid, uses 61-82-5, 3-Amino-1,2,4-triazole 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 67-51-6, 3,5-Dimethylpyrazole 3179-31-5, 3-Mercapto-1,2,4-triazole
7664-38-2, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(surface treating compns. contg. hydrazine deriv. and acid for improving corrosion resistance and paint adhesion of galvanized steel sheets)

L26 ANSWER 22 OF 56 HCA COPYRIGHT 2003 ACS on STN
134:124734 **Compositions** and processes for spin **etch planarization** in semiconductor device fabrication. Levert, Joseph; Towery, Daniel L. (Alliedsignal Inc., USA). PCT Int. Appl. WO 2001006555 A1 20010125, 38 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2.
APPLICATION: WO 2000-US18723 20000710. PRIORITY: US 1999-356487 19990719.
AB The present invention describes methods and chem. compns. for the

spin **etch planarization** of surfaces, particularly Cu and Ta. An **etching** soln. is brought into contact with the upper face of a spinning wafer through a nozzle, preferably an oscillating nozzle. The **etching** soln. has a compn. that oxidizes the spinning surface, forming a passivation layer thereon. The **etching** soln. further contains reactants for removing the passivation layer exposing the underlying surface to further reaction, leading to the desired **etching** of the surface. The characteristics of the **etching** soln. are adjusted such that reactant diffusion to lower regions of the surface limits the rate of **etching**. Faster reaction occurs at higher regions of the surface lying in more rapidly moving **etching** soln. resulting in the desired **planarization**.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
(in compns. and processes for spin **etch planarization** in semiconductor device fabrication)

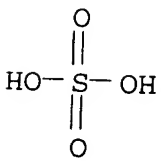
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-321
ICS C23F003-06
CC 76-3 (Electric Phenomena)
ST spin **etching polishing** semiconductor device fabrication; **chem mech polishing** device fabrication; oxidn **etching** device fabrication
IT Alcohols, processes

(aliph.; in compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT Surfactants
(anionic; in compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT Surfactants
(cationic; in compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT **Polishing**
(**chem.-mech.**; compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT **Etching**
Integrated circuits
Semiconductor device fabrication
(compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT Hydrocarbons, processes
(fluoro; in compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT Nozzles
(for spin **etch planarization** in semiconductor device fabrication)
IT Oxidizing agents
Wetting agents
(in compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT Amines, processes
Carboxylic acids, processes
Gelatins, processes
Phenols, processes
(in compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT Passivation
(in spin **etch planarization** in semiconductor device fabrication)
IT Surfactants
(nonionic; in compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT Surfactants
(org.; in compns. and processes for spin **etch planarization** in semiconductor device fabrication)
IT **Etching**
(photochem.; for **planarization** in semiconductor device fabrication)
IT Oxidation
(surface; in spin **etch planarization** in semiconductor device fabrication)
IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes
(compns. and processes for spin **etch planarization** of)
IT 57-55-6, Propyleneglycol, processes 60-00-4, EDTA, processes

62-76-0, Sodium oxalate 64-17-5, Ethanol, processes 64-19-7, Acetic acid, processes 67-56-1, Methanol, processes 68-04-2, Trisodium citrate 71-23-8, n-Propanol, processes 75-89-8 77-92-9, Citric acid, processes 87-69-4, Tartaric acid, processes 88-27-7, 2,6-Di-tert-butyl-4-[(dimethylamino)methyl]phenol 89-65-6, Erythorbic acid 95-14-7, 1H-Benzotriazole 102-71-6, Triethanolamine, processes 104-75-6, 2-Ethylhexylamine 107-21-1, 1,2-Ethanediol, processes 128-37-0, Agidol, processes 139-33-3 144-62-7, Oxalic acid, processes 288-36-8, 1,2,3-Triazole 288-88-0, 1H-1,2,4-Triazole 288-94-8, 1H-Tetrazole 1303-96-4, Borax 1310-73-2, Sodium hydroxide, processes 1333-39-7, Phenolsulfonic acid 1336-21-6, Ammonium hydroxide 6915-15-7, Malic acid 7439-98-7D, Molybdenum, salts, processes 7440-25-7D, Tantalum, salts, processes 7440-50-8D, Copper, salts, processes 7447-40-7, Potassium chloride, processes 7631-95-0, Sodium molybdate 7631-99-4, Sodium nitrate, processes 7647-01-0, Hydrogen chloride, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrogen fluoride**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes 7733-02-0, Zinc sulfate 7758-89-6, Cuprous chloride 7758-98-7, Cupric sulfate, processes 7775-09-9, Sodium chlorate (NaClO3) 8061-51-6, Sodium lignosulfonate 9002-89-5, Polyvinyl alcohol 9002-92-0, Poly(oxyethylene)lauryl ether 9004-32-4, Carboxymethylcellulose 12125-01-8, Ammonium fluoride 14066-19-4, Monohydrogen phosphate, processes 14265-44-2, Phosphate, processes 16887-00-6, Chloride, processes 17084-08-1, Hexafluorosilicate 26053-72-5, Diphenylsulfamic acid 27846-09-9, Iron monochloride 89800-24-8, Laprol 602

(in compns. and processes for spin **etch planarization** in semiconductor device fabrication)

L26 ANSWER 23 OF 56 HCA COPYRIGHT 2003 ACS on STN

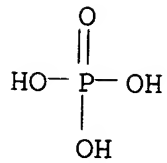
132:351623 Aqueous slurries for **chemical mechanical polishing**. Kubo, Fumio (Okamoto Kosaku Kikai Seisakusho K. K., Japan). Jpn. Kokai Tokkyo Koho JP 2000144109 A2 20000526, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-333383 19981110.

AB The slurries have pH 1-6 and consist of (a) abrasives of particle size 0.001-1 .mu.m 0.1-15, (b) oxidizing agents 0.5-15, (c) onium compds. obtained by reaction of inorg. acids with tetraalkylammonium hydroxide, tetraarylammonium hydroxide, tetraalkylphosphonium hydroxide, or tetraarylphosphonium hydroxide 0.1-10, and (d) inorg. acids or org. acids. The slurries show selective polishing of W against SiO2 and are suitable for fabrication of electronic devices.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(aq. **chem. mech. polishing** slurries for high tungsten removal selectivity for fabrication of electronic devices)

RN 7664-38-2 HCA

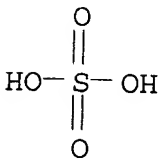
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C09K003-14
ICS C09K003-14; B24B037-00; C09K013-06; H01L021-304
CC 57-7 (Ceramics)
ST aq slurry **chem mech polishing**; **CMP** tungsten selectivity semiconductor device fabrication
IT Abrasives
(**chem. mech. polishing**; aq. **chem. mech. polishing** slurries for high tungsten removal selectivity for fabrication of electronic devices)
IT **Polishing**
(**chem.-mech.**, slurries; aq. **chem. mech. polishing** slurries for high tungsten removal selectivity for fabrication of electronic devices)
IT 1344-28-1, Alumina, uses
(abrasive; aq. **chem. mech. polishing** slurries for high tungsten removal selectivity for fabrication of electronic devices)
IT 64-19-7, Acetic acid, uses 75-59-2D, Tetramethylammonium hydroxide, salts 77-92-9, uses 77-98-5D, Tetraethylammonium hydroxide, salts 88-99-3, 1,2-Benzenedicarboxylic acid, uses 100-85-6D, Trimethylbenzylammonium hydroxide, salts 110-16-7, Maleic acid, uses 110-17-8, Fumaric acid, uses 373-68-2 1836-42-6D, Triethylbenzylammonium hydroxide, salts 1899-02-1D, Trimethylphenylammonium hydroxide, salts 2052-49-5D, Tetrabutylammonium hydroxide, salts **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**,

Hydrofluoric acid, uses **7664-93-9**,
Sulfuric acid, uses 7697-37-2, Nitric acid, uses
10043-35-3, Boric acid, uses 14518-69-5D, Tetrabutylphosphonium
hydroxide, salts 14814-27-8D, Tetramethylphosphonium hydroxide,
salts 14814-28-9D, Tetraethylphosphonium hydroxide, salts
16961-83-4, Fluorosilicic acid 21412-50-0D,
Trimethylphenylphosphonium hydroxide, salts 25826-24-8D,
Tetraphenylphosphonium hydroxide, salts 30382-83-3D,
Trimethylethylammonium hydroxide, salts 41606-94-4,
Tetraethylammonium hydrogenphthalate, uses 63951-24-6D,
Butyltrimethylammonium hydroxide, salts 67037-15-4,
Tetramethylammonium hydrogenmaleate, uses 79723-02-7,
Tetramethylammonium hydrogenphthalate, uses 93472-61-8D,
Tetraphenylammonium hydroxide, salts 95500-19-9D,
Dimethyldiethylammonium hydroxide, salts 109334-81-8D,
Triethylmethylammonium hydroxide, salts 111754-37-1,
Tetraethylammonium hydrogenmaleate, uses 115721-06-7D, salts
120087-74-3D, salts 120226-84-8, uses 120226-96-2, uses
129582-92-9D, salts 129710-09-4, uses 129710-10-7, uses
269412-24-0 269412-25-1 269412-26-2 269412-27-3D, salts
269412-28-4D, salts 269412-29-5D, salts 269412-30-8D, salts
269412-31-9D, salts 269730-25-8D, salts 269730-26-9D, salts
269730-27-0D, salts 269730-28-1D, salts
(aq. **chem. mech. polishing** slurries
for high tungsten removal selectivity for fabrication of
electronic devices)

IT 79-21-0, Peracetic acid 7722-84-1, Hydrogen peroxide, uses
10421-48-4, Ferric nitrate 13746-66-2, Potassium ferricyanate
15078-94-1, Ammonium cerium nitrate 56585-42-3, Ethylenediamine
tetraacetate
(oxidizing agent; aq. **chem. mech.**
polishing slurries for high tungsten removal selectivity
for fabrication of electronic devices)

IT 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes
(selective **polishing** of; aq. **chem.**
mech. polishing slurries for high tungsten
removal selectivity for fabrication of electronic devices)

L26 ANSWER 24 OF 56 HCA COPYRIGHT 2003 ACS on STN
132:328632 Method of fabricating embedded gate electrodes. Chen, Chih-rong; Yeh, Chi-chin (United Microelectronics Corp., Taiwan). U.S. US 6066532 A 20000523, 12 pp. (English). CODEN: USXXAM. APPLICATION: US 1999-419434 19991018.

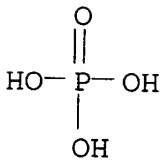
AB A method of fabricating an embedded gate electrode is disclosed. The method includes the steps of: Providing a semiconductor substrate; forming a patterned etch resistant mask layer over the semiconductor substrate, wherein the patterned etch resistant mask layer has a 1st opening for a desired location of a trench; anisotropically etching through the patterned etch resistant mask layer and into the semiconductor substrate, hence forming the trench at the desired location; removing the patterned etch resistant mask layer; depositing a 1st insulating layer over the semiconductor

substrate and filling up the trench; patterning a **planarized** 1st insulating layer to define a 2nd opening for the embedded gate electrode; forming a 2nd insulating layer at the bottom of the 2nd opening; depositing a conductive layer over the 2nd insulating layer and filling up the 2nd opening, hence forming the embedded gate electrode; ion implanting the semiconductor substrate to form source/drain regions; forming a spacer on the sidewall of the embedded gate electrode; depositing a refractory metal layer over the entire exposing surface of a resulting structure; and annealing the refractory metal layer to form a silicide layer on the embedded gate electrode and elsewhere on the source/drain regions.

IT **7664-38-2, Phosphoric acid**, uses
(etchant for silicon nitride; in method of fabricating embedded gate electrodes)

RN 7664-38-2 HCA

CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3, Hydrogen fluoride**, uses
7664-93-9, Sulfuric acid, uses
(in method of fabricating embedded gate electrodes)

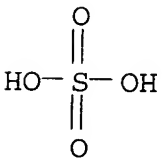
RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA

CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-336

NCL 438259000

CC 76-3 (Electric Phenomena)

IT **7664-38-2, Phosphoric acid**, uses
(etchant for silicon nitride; in method of fabricating embedded gate electrodes)

IT 67-63-0, Isopropanol, uses 1310-58-3, Potassium hydroxide, uses
7664-39-3, Hydrogen fluoride, uses
7664-93-9, Sulfuric acid, uses

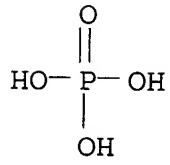
7722-84-1, Hydrogen peroxide, uses
(in method of fabricating embedded gate electrodes)

L26 ANSWER 25 OF 56 HCA COPYRIGHT 2003 ACS on STN
132:302004 **Chemical mechanical polishing** slurry system having an activator solution. Mahulikar, Deepak (Arch Specialty Chemicals, Inc., USA). PCT Int. Appl. WO 2000024842 A1 20000504, 21 pp. DESIGNATED STATES: W: JP, KR, SG; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US24864 19991022. PRIORITY: US 1998-PV105366 19981023.

AB This invention relates to a **CMP** slurry system for use in semiconductor device fabrication. The slurry system comprises 2 parts. The 1st part is a generic dispersion that contains only an abrasive and, optionally, a surfactant and a stabilizing agent. The generic dispersion can be used for polishing metals as well as interlayer dielecs. The 2nd part is a novel activator soln. comprising .gtoreq.2 components selected from: an oxidizer, acids, amines, chelating agents, F-contg. compds., corrosion inhibitors, buffering agents, surfactants, biol. agents, and their mixts.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrofluoric acid**, processes
7664-93-9, **Sulfuric acid**, processes
(**chem. mech. polishing** slurry system having activator soln. contg.)

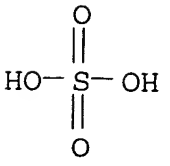
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C09K003-14

ICS C09G001-02; B24B001-00
CC 76-3 (Electric Phenomena)
ST **chem mech polishing** slurry activator soln; semiconductor device fabrication **CMP** slurry
IT Quaternary ammonium compounds, processes
(alkylbenzyldimethyl, chlorides; **chem. mech. polishing** slurry system having activator soln. contg.)
IT Surfactants
(amphoteric; **chem. mech. polishing** slurry system having activator soln. contg.)
IT Surfactants
(anionic; **chem. mech. polishing** slurry system having activator soln. contg.)
IT Surfactants
(cationic; **chem. mech. polishing** slurry system having activator soln. contg.)
IT Abrasives
Buffers
Chelating agents
Corrosion inhibitors
Oxidizing agents
Stabilizing agents
Surfactants
(**chem. mech. polishing** slurry system having activator soln. contg.)
IT Acids, processes
Alkali metal fluorides
Alkaline earth fluorides
Amines, processes
Carboxylic acids, processes
Tannins
(**chem. mech. polishing** slurry system having activator soln. contg.)
IT Semiconductor device fabrication
Slurries
(**chem. mech. polishing** slurry system having activator soln. for semiconductor device fabrication)
IT **Polishing**
(**chem.-mech.**; **chem. mech. polishing** slurry system having activator soln. for semiconductor device fabrication)
IT Electric insulators
(interlayer; slurry system having activator soln. for **chem.-mech. polishing** of)
IT Surfactants
(nonionic; **chem. mech. polishing** slurry system having activator soln. contg.)
IT 50-21-5, Lactic acid, processes 56-34-8, Tetraethylammonium chloride 60-00-4, Ethylenediaminetetraacetic acid, processes 64-18-6, Formic acid, processes 64-19-7, Acetic acid, processes 67-43-6, Diethylenetriaminepentaacetic acid 75-57-0,

Tetramethylammonium chloride 75-59-2, Tetramethylammonium hydroxide 77-92-9, Citric acid, processes 79-09-4, Propanoic acid, processes 87-69-4, Tartaric acid, processes 88-99-3, Phthalic acid, processes 95-14-7, 1H-Benzotriazole 102-71-6, Triethanolamine, processes 103-76-4, 1-Piperazineethanol 103-83-3D, Benzyldimethylamine, alkyl ammonium hydroxide derivs. 107-92-6, Butanoic acid, processes 109-52-4, Pentanoic acid, processes 111-14-8, Heptanoic acid 111-42-2, Diethanolamine, processes 112-05-0, Nonanoic acid 124-07-2, Octanoic acid, processes 136-85-6, 6-Tolyltriazole 139-13-9, Nitrilotriacetic acid 141-43-5, Monoethanolamine, processes 142-62-1, Hexanoic acid, processes 149-91-7, Gallic acid, processes 150-39-0, N-Hydroxyethylethylenediaminetriacetic acid 373-68-2, Tetramethylammonium fluoride 409-21-2, Silicon carbide (SiC), processes 526-95-4, Gluconic acid 627-74-7 929-06-6, Diethyleneglycolamine 1306-38-3, Ceria, processes 1310-58-3, Potassium hydroxide, processes 1314-23-4, Zirconium oxide, processes 1332-29-2, Tin oxide 1332-37-2, Iron oxide, processes 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 1341-49-7, Ammonium bifluoride 1344-28-1, Alumina, processes 3811-73-2, Sodium pyrithione 4499-86-9, Tetrapropylammonium hydroxide 5810-42-4, Tetrapropylammonium chloride 6915-15-7, Malic acid 7647-01-0, Hydrochloric acid, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrofluoric acid**, processes **7664-93-9**, **Sulfuric acid**, processes 7681-52-9, Sodium hypochlorite 7697-37-2, Nitric acid, processes 7758-19-2, Sodium chlorite 7803-49-8, Hydroxylamine, processes 12033-89-5, Silicon nitride, processes 12125-01-8, Ammonium fluoride 13463-67-7, Titanium dioxide, processes 35914-36-4, Pyrogallol carboxylic acid 57178-78-6 68444-11-1 123155-80-6 130397-22-7, Perfluoric acid 152275-68-8, 1-(2,3,Dicarboxypropyl)benzotriazole
(**chem. mech. polishing** slurry system having activator soln. contg.)

IT 7631-86-9, Silica, processes
(colloidal; **chem. mech. polishing** slurry system having activator soln. contg.)

IT 7429-90-5, Aluminum, processes 7440-25-7, Tantalum, processes 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes 7440-50-8, Copper, processes
(slurry system having activator soln. for **chem.-mech. polishing** of)

L26 ANSWER 26 OF 56 HCA COPYRIGHT 2003 ACS on STN

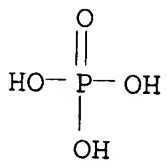
132:201947 Method for reclaiming wafer substrate. Hara, Yoshihiro; Suzuki, Tetsuo; Takada, Satoru; Inoue, Hidetoshi (Kabushiki Kaisha Kobe Seiko Sho, Japan; Kobe Precision Inc.). Eur. Pat. Appl. EP 986097 A2 20000315, 12 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-306853 19990827. PRIORITY: JP 1998-243868 19980828.

AB A method for reclaiming a wafer substrate having a metallic film and

a dielec. film includes a step for removing the entire metallic film and a part of the dielec. film with a chem. etching agent so as not to substantially dissolve the wafer substrate itself, a step for removing the residual dielec. layer and the degenerated zone beneath the surface of the substrate by **chem.-mech. polishing**, and a step for polishing at least one surface of the substrate.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(semiconductor wafer reclamation by etching with)

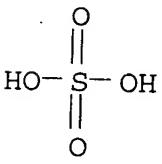
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-306
CC 76-3 (Electric Phenomena)
ST semiconductor wafer reclamation etching **chem mech polishing**
IT **Polishing**
(**chem.-mech.**; in reclamation of semiconductor wafers)
IT Semiconductor materials
(wafers; reclamation by etching with inorg. acids and **chem.-mech. polishing**)
IT 1306-38-3, Cerium oxide, uses 1314-23-4, Zirconium oxide, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(semiconductor wafer reclamation by acid etching and **chem.-mech. polishing** with compns. contg.)
IT **7664-38-2**, **Phosphoric acid**, uses

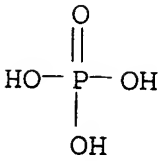
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
7697-37-2, Nitric acid, uses
(semiconductor wafer reclamation by etching with)

L26 ANSWER 27 OF 56 HCA COPYRIGHT 2003 ACS on STN
132:72235 Manufacturing process for semiconductor devices, **etchant compositions** and examples of the fabrication of such devices.. Kwag, Gyu-Hwan; Ko, Se-Jong; Hwang, Kyung-Seuk; Gil, Jun-Ing; Park, Sang-O.; Kim, Dae-Hoon; Chun, Sang-Moon; Jung, Ho-Gyun (Samsung Electronics Co. Ltd., Suwon, S. Korea). Ger. Offen. DE 19928570 A1 19991230, 28 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1999-19928570 19990622. PRIORITY: KR 1998-24232 19980625; KR 1998-31544 19980803.

AB A method is described for the prodn. of semiconductor devices, comprising the formation of conducting junctions restricting the no. of steps normally required for the prodn. of intermediate layers. A mixt., which can be used as an **etchant** in this prodn. method, is also introduced. The prodn. methods for semiconductor devices involve steps to produce a an insulating layer on the semiconductor substrate, making contact holes in the insulating layer, prodn. of a conducting layer on the insulating layer, to bury the contact holes, rotating the semiconductor substrate and the **etching** of the conducting layer applying the **etchant** while the substrate is rotating, and the rotating **etching** of a tungsten layer upon the application of an **etchant** in such a way that the conducting layer remains in the contact holes but does not remain on over the insulating layer. The compn. of the **etchant** is such that it contains at least an oxidizing agent which is selected from H2O2, O2, IO4-, BrO3, ClO3, S2O8-, KIO3, H5IO6, KOH and HNO3 and at least one activator selected form the list **HF**, NH4OH, **H3PO4**, **H2SO4**, NH4F and HCl and a buffer soln., all these chems. are mixed in pre-detd. ratios.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
(manufg. process for semiconductor devices, **etchant** compns. and examples of the fabrication of such devices)

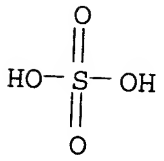
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



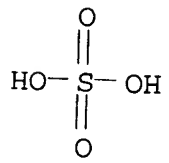
IC ICM H01L021-321
ICS H01L021-28; H01L021-768
CC 76-3 (Electric Phenomena)
ST manuf semiconductor device **etchant** compn junction contact hole insulator; oxidizing agent activator buffer soln **etchant** semiconductor device fabrication
IT Vapor deposition process
(chem.; manufg. process for semiconductor devices, **etchant** compns. and examples of fabrication of such devices)
IT Sputtering
(manufg. process for semiconductor devices, **etchant** compns. and examples of fabrication of such devices)
IT Borophosphosilicate glasses
Nitrites
Oxides (inorganic), processes
(manufg. process for semiconductor devices, **etchant** compns. and examples of fabrication of such devices)
IT Buffers
Contact holes
Electric conductors
Electric insulators
Etching
Oxidizing agents
Semiconductor device fabrication
Semiconductor junctions
(manufg. process for semiconductor devices, **etchant** compns. and examples of the fabrication of such devices)
IT Phosphates, processes
(silico-; manufg. process for semiconductor devices, **etchant** compns. and examples of fabrication of such devices)
IT 78-10-4, TEOS
(manufg. process for semiconductor devices, **etchant** compns. and examples of fabrication of such devices)
IT 7440-25-7, Tantalum, processes 7440-32-6, Titanium, processes
7440-33-7, Tungsten, processes 7440-50-8, Copper, processes
12033-62-4, Tantalum nitride 25583-20-4, Titanium nitride
(manufg. process for semiconductor devices, **etchant**

compns. and examples of the fabrication of such devices)
IT 1310-58-3, Potassium hydroxide, processes 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 7647-01-0, Hydrogen chloride, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrogen fluoride**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes 7758-05-6 7782-44-7, Oxygen, processes 10450-60-9, Periodic acid (H5IO6) 12125-01-8, Ammonium fluoride (NH4F) 14866-68-3, Chlorate 15056-35-6, Periodate (IO41-) 15092-81-6, Peroxydisulfate (S2O82-) 15541-45-4, Bromate
(manufg. process for semiconductor devices, **etchant** compns. and examples of the fabrication of such devices)
IT 7631-86-9, Silica, processes
(oxide layer; manufg. process for semiconductor devices, **etchant** compns. and examples of fabrication of such devices)
IT 7440-21-3, Silicon, processes
(poly-; manufg. process for semiconductor devices, **etchant** compns. and examples of the fabrication of such devices)

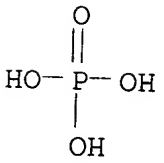
L26 ANSWER 28 OF 56 HCA COPYRIGHT 2003 ACS on STN
131:147464 Double-wall antimicrobial metal vacuum container made of copper-containing stainless steel and its manufacture. Wakatsuki, Tomohiro (Tiger Vacuum Bottle Co., Ltd., Japan; Toyo Rikagaku Kenkyusho K. K.). Jpn. Kokai Tokkyo Koho JP 11216070 A2 19990810 Heisei, 19 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-23239 19980204.
AB The title container, in which the outer and/or inner vessel is made of a stainless steel sheet contg. Cu crystd. therein, is manufd. by electropolishing the surface of area contg. the crystd. Cu in neutral salt solns. and optionally cleaning the polished surface with acids, etc. Instead of the above electropolishing, electropolishing with **H3PO4** or **H2SO4** or **mech. polishing** and following **chem.** cleaning with acids may be performed. The container may be treated with a mixt. of HNO3 and H2CrO4 for removing smut after chem. cleaning. Methods for the manuf. of the container are also described. The treatment process improves corrosion resistance and can remove passive film formed during manuf. of the container. The container can be used as a portable thermos bottle, a lunch jar,.
IT **7664-39-3**, **Hydrofluoric acid**, uses
(chem. cleaning with nitric acid and; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech. polishing** and optionally **chem.** cleaning with acids)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT **7664-93-9**, **Sulfuric acid**, uses
(electropolishing or chem. cleaning with; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech. polishing** and optionally **chem.** cleaning with acids)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-38-2**, **Phosphoric acid**, uses
(electropolishing with; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech. polishing** and optionally **chem.** cleaning with acids)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM A47J041-02
ICS A61L002-16
CC 55-6 (Ferrous Metals and Alloys)
Section cross-reference(s): 17
IT Containers
(Dewar; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech. polishing** and optionally **chem.** cleaning with acids)
IT Polishing
(electrochem.; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech. polishing** and optionally **chem.** cleaning with acids)
IT Salts, uses
(electropolishing or chem. cleaning with; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg.

stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT Antimicrobial agents
Cleaning
Electrolytic solutions
Polishing
(manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT Containers
(pans, heat-insulating; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT Cooking utensils
(portable thermos bottle; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT 10588-01-9
(anticorrosion treatment with; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT **7664-39-3**, **Hydrofluoric acid**, uses
(chem. cleaning with nitric acid and; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT 7631-99-4, Sodium nitrate, uses 7758-98-7, Copper sulfate, uses
(electrolytic solns. contg.; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT **7664-93-9**, **Sulfuric acid**, uses
(electropolishing or chem. cleaning with; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT **7664-38-2**, **Phosphoric acid**, uses
(electropolishing with; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT 7440-50-8, Copper, uses
(manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**

. **polishing** and optionally **chem**. cleaning with acids)

IT 12597-68-1, Stainless steel, processes
(manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech** . **polishing** and optionally **chem**. cleaning with acids)

IT 7697-37-2, Nitric acid, uses
(smut removal with chromic acid and; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

IT 7738-94-5, Chromic acid (H2CrO4)
(smut removal with nitric acid and; manuf. of double-wall antimicrobial metal vacuum container made of copper-contg. stainless steel by electrolytic or **mech**. **polishing** and optionally **chem**. cleaning with acids)

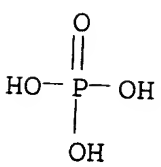
L26 ANSWER 29 OF 56 HCA COPYRIGHT 2003 ACS on STN
130:260620 **Planarization** of semiconductor substrates and an aqueous etching solution for it. Kruwinus, Hans-Jurgen; Sellmer, Reinhard (SEZ Semiconductor-Equipment Zubehor Fur Die Halbleiterfertigung Ag, Austria). Eur. Pat. Appl. EP 905754 A2 19990331, 9 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (German). CODEN: EPXXDW. APPLICATION: EP 1998-115931 19980824. PRIORITY: AT 1997-1658 19970930.

AB To remove a layer from a substrate having trenches or contact holes such that the layer remains only in the trenches or contact holes, an etchant is supplied as a continuous stream at a flow rate of .gtoreq.0.4 L/min, so that the etchant covers the whole surface of the substrate. A differential etching rate occurs; the etching rate in the areas between the trenches or contact holes is higher than that in the regions of the trenches themselves, so the layer on the surface of the substrate is etched away faster than that in the trenches.

IT **7664-38-2**, **Phosphoric acid**, processes
(etching by; in **planarization** of semiconductor substrates)

RN 7664-38-2 HCA

CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)

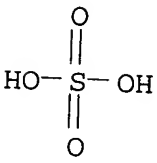


IT **7664-39-3**, **Hydrogen fluoride**, processes

(etching by; **planarization** of semiconductor substrates with aq. etching solns. contg.)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT **7664-93-9, Sulfuric acid**, processes
(**planarization** of semiconductor substrates with aq. etching solns. contg.)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-3105
ICS H01L021-321; H01L021-311; H01L021-3213
CC 76-3 (Electric Phenomena)
ST **planarization** semiconductor substrate aq etching soln
IT Acids, processes
(org.; **planarization** of semiconductor substrates with aq. etching solns. contg.)
IT Etching
Semiconductor materials
(**planarization** of semiconductor substrates with aq. etching soln.)
IT Contact holes
(**planarization** of semiconductor substrates with aq. etching soln. by removing layers deposited over)
IT Alcohols, processes
Glycols, processes
Polyoxyalkylenes, processes
(**planarization** of semiconductor substrates with aq. etching solns. contg.)
IT **7664-38-2, Phosphoric acid**, processes
7697-37-2, Nitric acid, processes
(etching by; in **planarization** of semiconductor substrates)
IT 7647-01-0, Hydrogen chloride, processes **7664-39-3, Hydrogen fluoride**, processes
(etching by; **planarization** of semiconductor substrates with aq. etching solns. contg.)
IT 7429-90-5, Aluminum, processes 7440-50-8, Copper, processes 11129-80-9, Platinum silicide 12627-41-7, Tungsten silicide 12738-91-9, Titanium silicide 59141-85-4, Gold silicide
(**planarization** of semiconductor substrates by etching

of)

IT 7440-21-3, Silicon, processes 7631-86-9, Silica, processes
(**planarization** of semiconductor substrates by etching of layers on)

IT 56-81-5, Glycerol, processes 64-17-5, Ethanol, processes 64-19-7, Acetic acid, processes **7664-93-9**, **Sulfuric acid**, processes 7727-54-0, Ammonium persulfate 12033-62-4, Tantalum nitride (TaN) 12125-01-8, Ammonium fluoride (NH4F) 13445-49-3D, Peroxydisulfuric acid, alkali metal salts 13530-68-2D, Chromic acid, alkali metal salts 15593-29-0, Sodium peroxymonosulfate (Na2(SO5)) 25322-68-3, Polyethylene glycol
(**planarization** of semiconductor substrates with aq. etching solns. contg.)

L26 ANSWER 30 OF 56 HCA COPYRIGHT 2003 ACS on STN

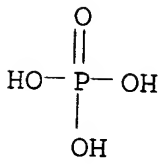
130:59907 Method of fabricating a semiconductor device, method of cleaning such a device, and cleaning agent for this purpose. Kordic, Srdjan; Knotter, Dirk Maarten; Mutsaers, Cornelis Adrianus Henricus Antonius (Koninklijke Philips Electronics N.V., Neth.; Philips AB). PCT Int. Appl. WO 9856038 A1 19981210, 15 pp. DESIGNATED STATES: W: JP; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1998-IB567 19980416. PRIORITY: EP 1997-201720 19970606.

AB A conductor track or so-called via is advantageously provided by a so-called Damascene process in the manuf. of, for example, ICs. The conductive material used often comprises two materials, such as an Al-Cu alloy which is provided in a recess or through opening in an insulating layer. First a thick layer of the desired material is provided over the insulating layer and the recess therein. Then the conductive material is removed from outside the recess again by **chem.-mech. polishing**. This, however, leads to a roughening of the surface of the remaining conductive material which is undesirable. According to the invention, a 1st layer of the 1st material, for example Al, is 1st provided over the insulating layer and the recess therein in such a process. And subsequently part of the 1st layer of the 1st material is removed by a chem. etchant, preferably by **chem.-mech. polishing**, whereupon a 2nd layer which is thin compared with the 1st layer and which is made of the 2nd material, for example Cu, is provided over the remaining portion of the 1st layer of the 1st material. After which the remaining portion of the 1st layer of the 1st material and the 2nd, comparatively thin layer of the 2nd material are mixed with one another by a thermal treatment. Since the 1st layer comprises only a single material, a conductor track or via is thus obtained without the surface thereof being roughened. The invention also relates to a method of cleaning an IC which comprises a conductor track or via of a material comprising Al, and a cleaning agent suitable for this purpose.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes

7664-93-9, Sulfuric acid, processes
(in method of fabricating semiconductor device, method of cleaning such device, and cleaning agent for purpose)

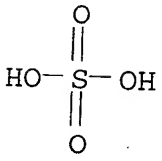
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-3205
ICS H01L021-3213; H01L021-324; H01L023-52
CC 76-3 (Electric Phenomena)
IT **Polishing**
(**chem.-mech.**; in method of fabricating semiconductor device, method of cleaning such device, and cleaning agent for purpose)
IT **7664-38-2, Phosphoric acid**, processes
7664-39-3, Hydrogen fluoride, processes
7664-93-9, Sulfuric acid, processes
7697-37-2, Nitric acid, processes 10028-15-6, Ozone, processes
10043-35-3, Boric acid, processes
(in method of fabricating semiconductor device, method of cleaning such device, and cleaning agent for purpose)

L26 ANSWER 31 OF 56 HCA COPYRIGHT 2003 ACS on STN
124:351225 Electrochemical cell having liquid electrolyte and gas permeable, hydrophobic membrane for detecting toxic gas in air. Milco, Gary A. (Mil-Ram Technology Inc, USA). Brit. UK Pat. Appl. GB 2292805 A1 19960306, 27 pp. (English). CODEN: BAXXDU. APPLICATION: GB 1995-17260 19950823. PRIORITY: US 1994-296452 19940826.
AB The cell includes working and counter electrodes, surrounded by a

liq. electrolyte , all of which are enclosed behind a gas permeable, hydrophobic membrane. The working electrode may be a single electrode or may be composed of multiple glassy carbon electrodes with exposed surfaces finished to a high polish arranged in a **planar** electrode array. The platinum counter electrode is either spatially sepd. from the array or comprises one or more electrodes in the array. The electrolyte compn. varies with the type of gas to be detected and can be aq., partially aq., or substantially non-aq. The electrolyte includes an alkali metal halide. A fixed potential applied between the working and counter electrodes is sufficient to initiate electrochem. reactions in the presence of the gas to be detected without interfering reactions of the electrolyte or air.

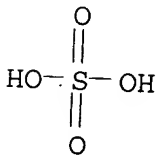
IT **7664-39-3**, **Hydrogen fluoride**, analysis
(electrochem. cell having liq. electrolyte and gas permeable, hydrophobic membrane for detecting toxic gas in air)

RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

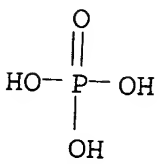
IT **7664-93-9**, **Sulfuric acid**, analysis
(pH adjuster; analyte; electrochem. cell having liq. electrolyte and gas permeable, hydrophobic membrane for detecting toxic gas in air)

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-38-2**, **Phosphoric acid**, uses
(pH adjuster; electrochem. cell having liq. electrolyte and gas permeable, hydrophobic membrane for detecting toxic gas in air)

RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM G01N027-404
ICS G01N027-49
CC 59-1 (Air Pollution and Industrial Hygiene)

IT 74-90-8, Hydrogen cyanide, analysis **7664-39-3**, **Hydrogen fluoride**, analysis 7664-41-7, Ammonia, analysis 7697-37-2, Nitric acid, analysis 7722-84-1, Hydrogen peroxide, analysis 7783-06-4, Hydrogen sulfide, analysis 10035-10-6, Hydrogen bromide, analysis 10049-04-4, Chlorine dioxide 10102-44-0, Nitrogen dioxide, analysis
(electrochem. cell having liq. electrolyte and gas permeable, hydrophobic membrane for detecting toxic gas in air)

IT **7664-93-9**, **Sulfuric acid**, analysis
(pH adjuster; analyte; electrochem. cell having liq. electrolyte and gas permeable, hydrophobic membrane for detecting toxic gas in air)

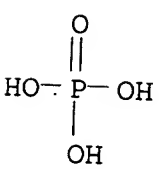
IT 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses
(pH adjuster; electrochem. cell having liq. electrolyte and gas permeable, hydrophobic membrane for detecting toxic gas in air)

L26 ANSWER 32 OF 56 HCA COPYRIGHT 2003 ACS on STN
117:176435 Prevention of hydrogen absorption for decreased embrittlement in chemical milling of alloy parts. Jodgens, Henry M.; Privett, Hugh M., III (United Technologies Corp., USA). U.S. US 5102499 A 19920407, 7 pp. (English). CODEN: USXXAM. APPLICATION: US 1991-637905 19910107.

AB Acid solns. for chem. milling of metals and alloys are improved by addn. of Cu, Ru, Rh, Pd, Os, Ir, Pt, and/or Au at typically 0.001-200 mmol/L soln. The treated acid baths are suitable for chem. milling, cleaning, or bright **polishing** with prevention of H absorption to decrease embrittlement of the metal or alloy parts. The process is suitable for chem. milling of Ti alloy, using the treated **aq**. baths contg. mainly **HF**, **H2SO4**, **H3PO4**, HNO3, and/or HCl. Thus, the **aq**. acid bath for chem. milling of Ti-35V-15Cr-(0.05-0.15)% C alloy parts contained 20 **HF** and 30% HNO3. The absorbed H content in the milled alloy was 115 ppm at 0.210 mmol Pd/L, vs. 340 ppm at 0.053 mmol Pd/L. Without Pd addn., the alloy cube specimens of 0.5-in. size showed fractures by embrittlement with absorbed H.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(chem. milling bath contg., noble metals added in, for decreased absorption of hydrogen in alloy parts)

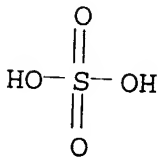
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM B44C001-22
ICS C23F001-00
NCL 156664000
CC 56-11 (Nonferrous Metals and Alloys)
ST chem milling alloy acid hydrogen; titanium vanadium alloy acid milling; noble metal acid bath milling; **hydrofluoric acid** bath milling alloy; nitric acid bath milling alloy
IT **Etching**
(acid bath for, noble metal addn. in, for decreased hydrogen embrittlement in alloys)
IT **Polishing**
(chem., acid bath for, noble metal addn. in, for decreased hydrogen embrittlement in alloys)
IT 77-92-9, Citric acid, uses 151-21-3, Orvus WA, uses 540-69-2, Ammonium formate 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrofluoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses
(chem. milling bath contg., noble metals added in, for decreased absorption of hydrogen in alloy parts)

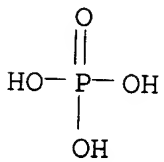
L26 ANSWER 33 OF 56 HCA COPYRIGHT 2003 ACS on STN
117:74084 Manufacture of silicon steel sheets finished with a mirror surface for electromagnetic cores. Kobayashi, Hisashi; Ushigami, Yoshiyuki; Fujii, Hiroyasu (Nippon Steel Corp., Japan). Eur. Pat. Appl. EP 467384 A2 19920122, 19 pp. DESIGNATED STATES: R: DE, FR, GB, IT. (English). CODEN: EPXXDW. APPLICATION: EP 1991-112107 19910719. PRIORITY: JP 1990-190441 19900720; JP 1990-250087 19900921; JP 1990-409378 19901228.
AB Grain-oriented Si steel sheet or strip is finish annealed, treated to remove oxide layer on the surface, bright annealed at .gtoreq.1000.degree. in atm. contg. 20-100 H2 and 0-80 vol.% inert gas (esp. Ar or N2), and coated with a layer promoting residual tensile stress. The resulting sheet or strip shows a decreased electromagnetic core loss comparable to that after conventional

chem. **polishing** and baking that promote higher wt. loss. Thus, the sheet 0.23 mm thick from steel contg. 3.2% Si was finish annealed, cooled, **etched** in **aq. H2SO4-HF** bath to remove forsterite film, washed, annealed for 5 h in H2 at 1200.degree. for developing a mirror surface, cooled, coated by phosphating in **H3PO4**, and baked for 5 min at 830.degree. to promote residual tensile stress. Electromagnetic core loss was 0.74 W/kg at 50 GHz and 1.7 T, vs. 0.87 W/kg after the conventional finishing.

IT **7664-38-2, Phosphoric acid**, uses
(coating bath contg. silicon steel sheet finished in, for electromagnetic cores)

RN 7664-38-2 HCA

CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C21D008-12

CC 55-11 (Ferrous Metals and Alloys)
Section cross-reference(s): 77

IT **7664-38-2, Phosphoric acid**, uses
(coating bath contg. silicon steel sheet finished in, for electromagnetic cores)

L26 ANSWER 34 OF 56 HCA COPYRIGHT 2003 ACS on STN

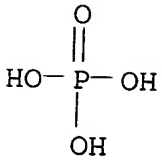
108:141655 **Etching** of Group IIIA pnictides. (American Telephone and Telegraph Co., USA). Jpn. Kokai Tokkyo Koho JP 61158146 A2 19860717 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-293344 19851227. PRIORITY: US 1984-687129 19841228.

AB Photoelectrochem. **etching** (e.g., in device manuf.) of an n-type (or semi-insulating) Group IIIA element pnictide by passing an elec. current through the material, an electrolyte, and an anode entails: (a) adding an amt. of energy to the material which is equal to the difference between the min. energy level of the conduction band and the max. energy level of the valence band; (b) irradiating the material to produce holes in the valence band; and (c) adding to the electrolyte a nonaq. solvent (e.g., MeOH) contg. <10 wt.% **H2O** and a material to increase elec. cond. The method produces **smooth** and fast **etching** of the material.

IT **7664-38-2**, uses and miscellaneous **7664-39-3**, uses and miscellaneous **7664-93-9**, uses and miscellaneous
(electrolytes contg., for photoelectrochem. **etching** of Group IIIA pnictides)

RN 7664-38-2 HCA

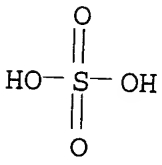
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-306
ICS H01L033-00; H01S003-18
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 72, 74
ST photoelectrochem **etching** semiconductor material; Group IIIA pnictide photoelectrochem **etching**; aluminum pnictide photoelectrochem **etching**; indium pnictide photoelectrochem **etching**; methanol electrolyte photoelectrochem **etching** semiconductor
IT Electroluminescent devices
Semiconductor devices
(fabrication of, photoelectrochem. **etching** of Group IIIA element pnictides in)
IT Aluminum pnictides
Group IIIA element pnictides
Indium pnictides
(photoelectrochem. **etching** of, in device manuf.)
IT **Etching**
(photoelectrochem., of Group IIIA pnictides in device manuf.)
IT 67-56-1, Methanol, uses and miscellaneous 75-05-8, uses and miscellaneous 124-41-4 1643-19-2 7647-01-0, uses and miscellaneous **7664-38-2**, uses and miscellaneous **7664-39-3**, uses and miscellaneous **7664-93-9**, uses and miscellaneous
(electrolytes contg., for photoelectrochem. **etching** of Group IIIA pnictides)
IT 12645-36-2 37382-15-3 51680-21-8 106070-09-1 106070-22-8 106070-23-9 106070-25-1 107067-73-2 107404-26-2 107404-27-3

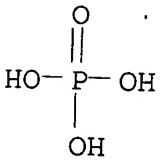
107404-28-4
(photoelectrochem. **etching** of, in device manuf.)

L26 ANSWER 35 OF 56 HCA COPYRIGHT 2003 ACS on STN
108:80619 Multistage heat treatment of optical glass tubes. Schmid, Werner; Wichert, Friedel; Lau, Ruth; Braune, Hannelore; Hofmann, Christel; Medicke, Christine (Ger. Dem. Rep.). Ger. (East) DD 248928 A3 19870826, 3 pp. (German). CODEN: GEXXA8. APPLICATION: DD 1981-234340 19811026.

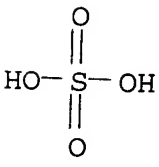
AB In **etching** and fire-**polishing** of glass tubes, the surface to be treated, esp. the inner surface, is first treated by a known **etching** process with a moving acid mixt. contg. highly concd. **HF** for 5 min at 0-50.degree., then by a known neutralization-drying process, and finally by a 1-stage heat treatment at 1700-2000.degree.. The acid soln. may also contain **H3PO4** and **H2SO4**. A glass tube was stoppered at one end, filled with 38-40% **HF** soln. at .apprx.25.degree. and shaken many times for .apprx.40 min, emptied, rinsed with deionized **water** and Me2CHOH, and dried with dust-free N. The tube was then heated at .apprx.1850.degree. by a H2/O2 burner in a glass-blowing device rotating at .apprx.60 rpm. The treatment prevents changes in the inner diam. of the tube.

IT **7664-38-2P**, **Phosphoric acid**, uses and miscellaneous **7664-93-9P**, **Sulfuric acid**, uses and miscellaneous
(**etching** by **hydrofluoric acid** and, of glass tube surface, with subsequent drying and heat treatment for dimensional stability)

RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



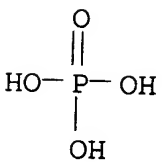
IT **7664-39-3P**, **Hydrogen fluoride**, uses and miscellaneous
(**etching** by, of glass tube surface, with subsequent drying and heat treatment for dimensional stability)

RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IC ICM C03C015-02
ICS C03B029-02
CC 57-1 (Ceramics)
IT Pipes and Tubes
(surface **etching** and heat treatment of glass for, for dimensional stability)
IT **7664-38-2P**, **Phosphoric acid**, uses and miscellaneous **7664-93-9P**, **Sulfuric acid**, uses and miscellaneous
(**etching** by **hydrofluoric acid** and, of glass tube surface, with subsequent drying and heat treatment for dimensional stability)
IT **7664-39-3P**, **Hydrogen fluoride**, uses and miscellaneous
(**etching** by, of glass tube surface, with subsequent drying and heat treatment for dimensional stability)

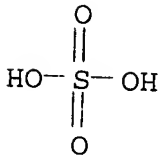
L26 ANSWER 36 OF 56 HCA COPYRIGHT 2003 ACS on STN
107:27154 **Polishing** of inside of metal pipes. Sugita, Akira (Nisso Stainless Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62037380 A2 19870218 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-175233 19850808.
AB A long rod having wound **polishing** medium, cloth, is inserted in a metal pipe and rotated, and an **etchant** is fed into 1 end of the pipe which is moved back and forth to give .ltoreq.0.5 .mu. roughness. Optionally, the rod is wetted with an **etchant**. Thus, Cu or Cu alloy pipe of .ltoreq.20 mm diam. and 2 m length was **polished** with a **polishing** medium wetted with HNO3 15, **H2SO4** 5, **H3PO4** 10, sulfamic acid 1, nonionic surfactant 1, 0.5-10 .mu. size alumina 30, and **water** 38%. The pipe moves .apprx.10 cm stroke.
IT **7664-38-2**, **Phosphoric acid**, properties
7664-39-3, **Hydrofluoric acid**, properties
7664-93-9, **Sulfuric acid**, properties
(metal **polishing** soln. contg., for inside pipe cleaning)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



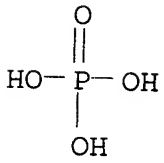
IC ICM C23F003-00
CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 55
ST metal pipe inside **polishing**; copper pipe inside **polishing** app; **etchant** metal pipe inside **polishing**
IT Surfactants
(metal **polishing** soln. contg., for inside pipe cleaning)
IT Pipes and Tubes
(metal, **polishing** of inside of)
IT **Polishing**
(of metals, pipe inside, app. for)
IT Copper base
(pipe, **polishing** of inside of)
IT 1344-28-1, Alumina, properties 5329-14-6, Sulfamic acid **7664-38-2**, **Phosphoric acid**, properties **7664-39-3**, **Hydrofluoric acid**, properties **7664-93-9**, **Sulfuric acid**, properties 7697-37-2, Nitric acid, properties
(metal **polishing** soln. contg., for inside pipe cleaning)
IT 7440-50-8, Copper, reactions
(pipe, **polishing** of inside of)

L26 ANSWER 37 OF 56 HCA COPYRIGHT 2003 ACS on STN
104:114481 Surface treatment of aluminum alloy. Furukawa, Shichiro; Nakagishi, Yutaka; Yamato, Shigeru (Okuno Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 60181282 A2 19850914 Showa, 16 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-34703 19840224.
AB Al-alloy castings or die castings are **polished** and coated for high-quality products by a process comprising: (a) chem. **polishing** with **aq. H3PO4** bath; (b) repolishing with a soln. contg. F- 2-20, SO42- 20-40, and NO3- 30-70%; (c) optional mech. **polishing** by barrel finishing

and/or shot blasting; and (d) conversion coating, anodizing, coloring, painting, chem. depositing, and/or electroplating. Stage b shortens the total **polishing** time, removes surface smut, and suppresses generation of N oxides. Thus, JIS H5205 Al-alloy casting was dipped 1 min into **aq**. soln. (100.degree.) contg. 85% **H3PO4** 82.5, 62% HNO3 7, and Cu(NO3)2 0.5%, and then into **aq**. bath (25.degree.) contg. **H2SO4** 22, HNO3 40, **HF** 5, N compd. 3, and **water** 30%. Emission of N oxides was 210, smuts were removed in 25 s, and a defect-free surface was formed. For **aq**. bath contg. **H2SO4** 2, HNO3 40, **HF** 5, N compd. 3, and **water** 50%, smuts were partially removed in 100 s and emission of N oxides was 180 ppm.

IT **7664-38-2**, properties **7664-39-3**, properties **7664-93-9**, properties
(chem. **polishing** soln. contg., for aluminum alloy casting)

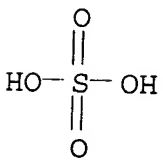
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

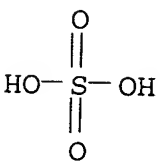
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C23F003-03
ICS B05D003-10; C23C018-18; C23C022-78; C25D011-16
CC 56-6 (Nonferrous Metals and Alloys)
ST aluminum alloy casting chem **polishing**; coating cast aluminum alloy **polishing**; anodizing cast aluminum alloy **polishing**; coloring cast aluminum alloy **polishing**; painting cast aluminum alloy **polishing**; electroplating cast aluminum alloy **polishing**; cast aluminum alloy cleaning bath

IT Anodization
Coating process
(of aluminum alloy castings, chem. **polishing** for)
IT Cast metals and alloys
(aluminum alloys, **etch** cleaning of, baths for)
IT **Polishing**
(chem., of aluminum alloy castings, for coating or anodizing)
IT Aluminum alloy, nonbase
(cast, surface treatment of, chem. **polishing** in)
IT 3251-29-4 **7664-38-2**, properties **7664-39-3**, properties **7664-93-9**, properties 7697-37-2, properties
(chem. **polishing** soln. contg., for aluminum alloy casting)
IT 12615-99-5 12635-41-5 12698-16-7 12725-09-6 12773-38-5 12773-44-3 12773-47-6 39462-14-1
(surface treatment of, chem. **polishing** in)

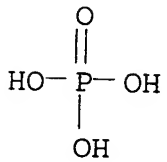
L26 ANSWER 38 OF 56 HCA COPYRIGHT 2003 ACS on STN
102:134355 Acidic **compositions**. Garcia, Silverio M. (Capetrol International, Inc., USA). Eur. Pat. Appl. EP 131525 A2 19850116, 26 pp. DESIGNATED STATES: R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1984-420068 19840412. PRIORITY: US 1983-549290 19830711; US 1983-484201 19831204.
AB An acidic mixt. having a pH < 1 is prepd. by mixing HCl 45-80 and **H3PO4** 20-55 wt. %, and adding 2-20 wt. % hydroxy carboxylic acid and 1-10 wt.% dicarboxylic acid. Also, a polyamine may be added (1-5 wt.%). Also, **HF** may be used. The final mixt. contains 70-90 wt.% **H2O**. Thus, an **aq**. acidic compn. was prepd. by mixing HCl 32.57 and **H3PO4** 18.82 kg which gave a mixt. weighing 51.20 kg because of fume formation. The mixt. was dild. with 150.6 kg **H2O** and citric acid 9.78 and H2C2O4 6.77 kg were added. An addnl. 218.36 kg **water** was used to dil the soln. which had a pH of 0.49. Another mixt. was prepd. by adding hexamethylenetetramine to the soln. and its pH was 0.91. When a soln. prepd. by adding 5% **HF** was used to clean glass the grime was removed but there was no **etching**. When the amine-modified mixt. mixed with addnl. HCl was placed in a radiator having large deposits of rust and scale the radiator was cleaned without being corroded or damaged.
IT **7664-93-9**, uses and miscellaneous
(acid mixt. contg., inhibition of, for automobile battery rejuvenation)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3**, uses and miscellaneous
(acid mixt. contg., inhibition of, for glass cleaning without **etching**)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT **7664-38-2**, uses and miscellaneous
(hydrochloric acid and, inhibition of, by citric acid and hexamethylenetetramine in oxalic acid)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



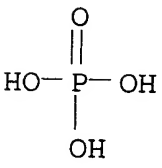
IC ICM C09K013-04
ICS C23G001-02; C03C023-00; H01M010-08
CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 47, 55, 57, 72
ST hydrochloric acid inhibited; **phosphoric acid** inhibited; acid inhibition
IT Glass, oxide
(cleaning of surface of, without **etching**, inhibited hydrochloric acid soln. for)
IT Batteries, secondary
(lead-acid, rejuvenation of, inhibited **sulfuric acid** soln. for)
IT **7664-93-9**, uses and miscellaneous
(acid mixt. contg., inhibition of, for automobile battery rejuvenation)
IT 7647-01-0, uses and miscellaneous **7664-39-3**, uses and miscellaneous
(acid mixt. contg., inhibition of, for glass cleaning without **etching**)
IT 7647-01-0, uses and miscellaneous
(contg. **phosphoric acid**, inhibition of, by citric acid and hexamethylenetetramine and oxide gases)
IT **7664-38-2**, uses and miscellaneous
(hydrochloric acid and, inhibition of, by citric acid and hexamethylenetetramine in oxalic acid)
IT 77-92-9, uses and miscellaneous 100-97-0, uses and miscellaneous 144-62-7, uses and miscellaneous
(inhibition by, of hydrochloric **acid** and **phosphoric acid**)

L26 ANSWER 39 OF 56 HCA COPYRIGHT 2003 ACS on STN
101:77479 **Composition** for chemically brightening/**smoothening (polishing)/etching** metals and alloys. Swaminathan, Syamala; Saraswathy, Ramachandran (India). Indian IN 151937 A 19830903, 10 pp. (English). CODEN: INXXAP. APPLICATION: IN 1981-MA10 19810121.

AB **Etching** bath contg. H2O2, .gtoreq.1 acids, and .gtoreq.1 stabilizers (as a surface-active agent) is used for the simultaneous **polishing** and brightening treatment of metals and alloys. The H2O2 oxidizes the metal to form an oxide film that is dissolved by an acid. Nonionic surfactants in combination with urea promote bath stability. Acid selection is related to the metal or alloy to be **polished**. Oxalic acid [144-62-7] is preferred for steel.

IT **7664-38-2**, reactions **7664-39-3**, reactions **7664-93-9**, reactions
(**etching** and **polishing** bath contg., hydrogen peroxide with surfactants in)

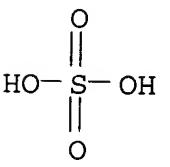
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC C09G001-00
CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 55
ST bright **etching** bath hydrogen peroxide; acid bath bright **etching** peroxide; surfactant bath **etching** peroxide; urea bath bright **etching** peroxide
IT Fatty acids, esters

(alkoxylated, **etching** and **polishing** bath contg., hydrogen peroxide with acid in)

IT **Etching**
(baths for, hydrogen peroxide in)

IT Imidazolium compounds
(**etching** and **polishing** bath contg., hydrogen peroxide with acid in)

IT Surfactants
(**etching** bath contg., hydrogen peroxide in, bright **polishing** by)

IT Alcohols, compounds
Amides, compounds
(fatty, alkoxylated, **etching** and **polishing** bath contg., hydrogen peroxide with acid in)

IT 107-68-6 120-40-1 9004-99-3 25155-30-0 75633-74-8
(**etching** and **polishing** bath contg., hydrogen peroxide with acid in)

IT 151-21-3, reactions 7552-23-0
(**etching** and **polishing** bath contg., hydrogen peroxide with acid in)

IT **7664-38-2**, reactions **7664-39-3**, reactions **7664-93-9**, reactions 7697-37-2, reactions
(**etching** and **polishing** bath contg., hydrogen peroxide with surfactants in)

IT 7722-84-1, reactions
(**etching** bath contg., acids and surfactant in, for bright **polishing**)

IT 57-13-6, reactions
(**etching** bath contg., hydrogen peroxide in, for bright **polishing**)

IT 144-62-7, reactions
(steel **etching** and **polishing** in bath contg., hydrogen peroxide in)

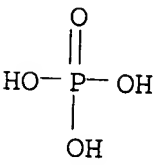
L26 ANSWER 40 OF 56 HCA COPYRIGHT 2003 ACS on STN
94:212321 Surface characterization of stainless steels prepared with various surface treatments. Seo, M.; Sato, N. (Fac. Eng., Hokkaido Univ., Sapporo, 060, Japan). Transactions of the Japan Institute of Metals, 21(12), 805-10 (English) 1980. CODEN: TJIMAA. ISSN: 0021-4434.

AB The compn. profiles with depth on the surface were studied for SUS 304 [11109-50-5] and 316 [11107-04-3] stainless steels prepd. with various **etching** and variety of surface treatment. The profiles were measured by a simultaneous use of Ar-ion sputter **etching** and Auger electron spectroscopy. Cr was enriched in the surface oxide films, whereas Ni was enriched at the film/substrate interface. The degree of Cr enrichment depended on the surface treatment, and increased in the following order: mech. **polishing** with emery paper in **water** < chem. **tching** in mixed acid (1% **HF** + 10% HNO3) < electropolishing in mixed acid (CH3COOH + HClO4 at 20:1) < chem. treatment in 10% HNO3, or chem. passivation in 30% HNO3. The degree

of Ni enrichment at the film/substrate interface increased with increasing degree of Cr enrichment in the film. The surface oxide on 304 stainless steel was always thicker than that on 316 stainless steel, irresp. of the surface treatments. The aging of specimen for 1 wk in dessiccator decreased the Cr enrichment, and increased the film thickness.

IT **7664-38-2**, reactions **7664-39-3**, reactions **7664-93-9**, reactions
(stainless steel **etching** by, surface compn. in relation to)

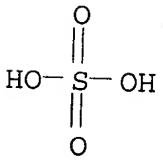
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 55-6 (Ferrous Metals and Alloys)
IT **Etching**
(of stainless steel, surface compn. in relation to)
IT 64-19-7, reactions 7601-90-3, reactions **7664-38-2**, reactions **7664-39-3**, reactions **7664-93-9**, reactions 7697-37-2, reactions
(stainless steel **etching** by, surface compn. in relation to)

L26 ANSWER 41 OF 56 HCA COPYRIGHT 2003 ACS on STN
91:150342 **Etching** of ferrite-glass **composite** used in ferrite magnetic heads. Fujimura, Kenichi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 54046148 19790411 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1977-113511 19770920.
AB The simultaneous electrochem. **etching** of the ferrite and

glass components of a ferrite-glass composite during the fabrication of a ferrite magnetic head is achieved in an electrolytic bath prepd. by adding **HF** to a **H2SO4-H3PO4** mixt. The glass and ferrite are **etched** at approx. the same rate.

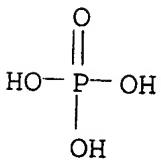
IC C25F003-00; C03C015-00; C23F001-00
CC 77-3 (Magnetic Phenomena)
Section cross-reference(s): 72
ST **etching** ferrite glass composite; recording head ferrite glass
IT Glass, oxide
(**etching** of composite from ferrite and, for recording heads)
IT Ferrite substances
(**etching** of composites from glass and, for recording heads)
IT **Etching**
(electrochem., of ferrite-glass composite for recording head)
IT Recording apparatus
(heads, ferrite-glass composites for, **etching** of)

L26 ANSWER 42 OF 56 HCA COPYRIGHT 2003 ACS on STN
90:88880 **Aqueous** acidic metal-containing coating **composition** for coating metal surfaces. Nishida, Takao; Tonoike, Kiyoshi (Amchem Products, Inc., USA). Can. CA 1043922 19781205, 50 pp. (English). CODEN: CAXXA4. APPLICATION: CA 1974-193846 19740301.

AB Acidic **aq**. coating compns. contg. 5-550 g/L dispersed solid resin particles, having a pH 1.6-5 and prepd. from metal-contg. compds., are effective in autodip coating of metals; the wt. or thickness of the coating increases with increasing immersion time. Thus, metal panels are dipped 3 min in a compn. contg. butadiene-styrene copolymer [9003-55-8] (Hycar LX 407) 180, **HF** 3, FeCl3 5 g and **water** to make 1 L. The panels are removed from the bath and dried 10 min at 356.degree.F to give **smooth**, uniform coatings.

IT **7664-38-2**, uses and miscellaneous **7664-39-3**, uses and miscellaneous **7664-93-9**, uses and miscellaneous
(coatings, contg. metal compds. and resins, for autodeposition on metals)

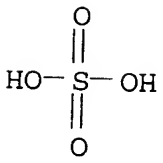
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

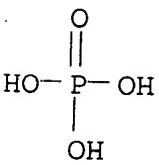
HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC C09D005-08
CC 42-7 (Coatings, Inks, and Related Products)
Section cross-reference(s): 55, 56
IT 64-19-7, uses and miscellaneous **7664-38-2**, uses and miscellaneous **7664-39-3**, uses and miscellaneous **7664-93-9**, uses and miscellaneous
(coatings, contg. metal compds. and resins, for autodeposition on metals)

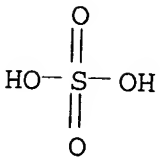
L26 ANSWER 43 OF 56 HCA COPYRIGHT 2003 ACS on STN
79:149004 **Composition** for baths for treatment of metallic surfaces. Dubourg, Marie P. (Procedes Nivoxal). Fr. FR 2158664 19730720, 9 pp. (French). CODEN: FRXXAK. APPLICATION: FR 1971-38660 19711027.
AB Metallic surfaces are degreased and **etched** in an **aq**. bath contg. HCl 30-60 and/or **H2SO4** 10-15, **HF** 0.2-0.5, **H3PO4** 1.5-3.5, HCOOH 0.2-0.5, ethylene oxide condensate with nonylphenol 1.0-2.5, and 1,4-butynediol 0.5-1%. The compn. is changed slightly for different metals.
IT **7664-38-2**, uses and miscellaneous **7664-39-3**, uses and miscellaneous **7664-93-9**, uses and miscellaneous
(in metal degreasing and pickling baths)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

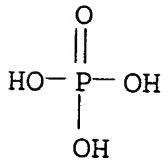
HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC C23G
CC 56-5 (Nonferrous Metals and Alloys)
ST degreasing acid **etch** metal; nonylphenol addn **etch** metal; butynediol addn **etch** metal
IT 64-18-6, uses and miscellaneous 110-65-6 7647-01-0, uses and miscellaneous **7664-38-2**, uses and miscellaneous **7664-39-3**, uses and miscellaneous **7664-93-9**, uses and miscellaneous 9016-45-9
(in metal degreasing and pickling baths)

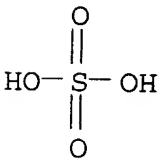
L26 ANSWER 44 OF 56 HCA COPYRIGHT 2003 ACS on STN
76:145275 Silica powders of respirable size. Effect of methods of comminution and pretreatment on electrophoretic mobility in solutions of varying ionic strength, acidity, and metal-ion content. Bergman, Imanuel; Langrish, Brian (Saf. Mines Res. Establ., Dep. Trade Ind., Sheffield, UK). Journal of Electroanalytical Chemistry and Interfacial Electrochemistry, 34(1), 203-10 (English) 1972. CODEN: JEIEBC. ISSN: 0022-0728.
AB A robust and easily constructed electrophoretic cell with good optical properties was designed and used to study the electrophoretic mobilities of quartz, tridymite, cristobalite, and vitreous SiO2 powders in saline solns. of various acidities and ionic strengths in an effort to explain the obsd. variability in cytotoxic activity of the SiO2 powders. Increases of the pH of the soln. led to increases in neg. charge, decreases in ionic strength resulted in higher mobilities. Differences between the polymorphic forms were obsd. only at low ionic strengths. **Etching** of the SiO2 surfaces with alkali, **HF**, or other mineral acids gave powders with lower mobilities. This effect was reversed by treatment with boiling **water** provided the powders had not previously been dried at 105.degree.. Increased mobilities of dry-ground powders was not lowered with boiling **water**. The interaction of the SiO2 surfaces with various metal ions is discussed, as well as the metal-ion concn. required for charge reversal. No significant differences between the polymorphic forms are reported.
IT **7664-38-2**, properties **7664-39-3**, properties **7664-93-9**, properties
(electrophoretic mobility of powd. silica after treatment with)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 66 (Surface Chemistry and Colloids)
Section cross-reference(s): 4
IT 1310-73-2, properties 7647-01-0, properties **7664-38-2**, properties **7664-39-3**, properties **7664-93-9**, properties 7697-37-2, properties
(electrophoretic mobility of powd. silica after treatment with)
IT 7631-86-9, vitreous 14464-46-1 14808-60-7, properties 15468-32-3
(electrophoretic mobility of powders of, effect of **grinding** and pretreatment methods on)

L26 ANSWER 45 OF 56 HCA COPYRIGHT 2003 ACS on STN
76:103151 **Compositions** and process for treating aluminum and aluminum alloys prior to finishing. Grunwald, John J.; Horner, Edmund E. (MacDermid, Inc.). U.S. US 3634262 19720111, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1970-37013 19700513.
AB Cleaned articles composed of Al or its alloys contg. .ltoreq.1 Si are prepd. for anodizing, painting, dyeing, brightening, etc., without generating offensive fumes, requiring much time, or leaving difficult spent-soln. disposal problems, by immersion for 1-10 min in an **aq**. soln. at .ltoreq.3 pH and 60-170.degree.F, contg. from 18 g/l. up to satn. of a peroxydiphosphate of NH3, or of an alkali metal, or alk. earth metal, a sol. salt to provide up to 6 g/l. of fluoride ion, and preferably an ionic or nonionic wetting agent. Rinsing for 30 sec in cold **H2O** is sufficient after this treatment. **H2SO4**, **H3PO4**, and H(NH2)SO3 are preferred acids. The ingredients of the soln. can be supplied as a dry mixt. such as NaHSO4 77-95, K4P2O8 or similar peroxydiphosphate 5-20, and KF 0-3 wt. , for soln. in **H2O** before use. Al

alloys 6061, 6063, and 7075 were immersed for 5 min in a non-**etch** soak cleaner of .8 oz/gal at 170.degree.F, rinsed 30 sec in cold **H2O**, then 3 min in an alk. **etchant** at 10 oz/gal and 160.degree.F which produced smut, and after another rinse were immersed 3 min in one of several solns. at 70-2.degree.F contg. 111.6 or 118.6 g K4P2O8/l., 40 ml concd. **H2SO4**/l., and 2.4 or 8.4 g/l. of NaF, NaHF2, NH4HF2, or Na2SiF6 or 2 ml/l. of 70 **HF**, followed by another 30-sec rinse. Each of these treatments removed the smut, leaving a very satisfactory surface for finishing operations.

IC C11D
NCL 252100000
CC 56 (Nonferrous Metals and Alloys)

L26 ANSWER 46 OF 56 HCA COPYRIGHT 2003 ACS on STN
75:144647 **Etching** of gallium arsenide in nitric acid **mixtures** with other inorganic acids. Vozmilova, L. N.; Stupina, N. M. (USSR). Arsenid Galliya, No. 3, 210-16 From: Ref. Zh., Met. 1971, Abstr. No. 2G517 (Russian) 1970. CODEN: ASGLAL. ISSN: 0365-6780.

AB The effect of concn. of acids in HNO3-**HF**-**H2O** and HNO3-**H3PO4**-**H2O** systems on the dissoln. rate of GaAs and on the quality of surface **polishing** was studied. The effect of **H2SO4** addn. to these systems on **etching** rate and **polishing** quality was also studied. New compns. of **etchants** giving a **polished** GaAs surface were detd.: HNO3:**HF**:**H2O** = 1:2:1 or 1:3:1; HNO3:**HF**:**H2SO4**:**H2O** : 1:9:4:1; HNO3:**H3PO4**:**H2SO4**:**H2O** : 2:14:11:3.

CC 70 (Crystallization and Crystal Structure)
ST **etching** gallium arsenide; **polishing** gallium arsenide
IT **Etching**
(of gallium arsenide)
IT 1303-00-0, reactions
(**etching** of)

L26 ANSWER 47 OF 56 HCA COPYRIGHT 2003 ACS on STN
70:31292 **Etching** metals rapidly and uniformly while ultrasonically vibrated. Weinberg, Harold P. (Value Engineering Co.). U.S. US 3411999 19681119, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1965-512935 19651210.

AB The **etching** of metals such as Al, Ti, Be, B, Ni, and W for chem. milling, surface improvement, etc. by any chem. active soln. or electrolysis, proceeds faster with more uniform attack over the exposed area leaving a **smoother** surface, if vibrations are applied. A method is described in which the article is immersed in the soln. held in a rigid brittle material such as glass, which in turn is suspended in a tank of tap **water** that has a steel diaphragm in its bottom, attached to a BaTiO3 transducer. The diaphragm is vibrated by an oscillator connected to it, and

energized through a coaxial cable coupled to the transducer element to produce vibrations at an ultrasonic frequency such as 25 kHz., which are transmitted through the **water** and glass container to the **etching** soln. therein. This app. can be used for either chem. or electrolytic **etching**, and is described in detail, but illustrated without a transmitting diaphragm other than the tank bottom. When an article of 6061 Al alloy masked by an acid resist was **etched** with an **aq**. soln. contg. HNO3, **HF**, and HCl such that the rate of metal removal was 0.0005 in./min. depth, a rate of 0.0015 in./min. was attained with such vibration, and the **etched** surface was **smoother** and flatter, with no lateral undercutting at the resist edges. The vibrations probably disperse the surface sludge and H bubbles which retard the attack during static **etching**. When the **etch** by this soln. was electrolytic with 50 amp./ft.2 c.d., the metal removal rate was decreased to 0.00015 in./min. by an insulating ion-barrier at the metal-liq. interface, but with the vibrations this barrier was broken and a rate of 0.0045 in./min. was attained. Several other similar comparisons pertaining to the **etching** of Ti, Be, W, and B are reported. A Be sheet was **etched** with vibrations in an **etchant** consisting of **H3PO4** 450, **H2SO4** 26.5 ml., and CrO3 53 g. at 0.0009 in./min. leaving a surface finish rated as 8-16 .mu.-in. roughness; whereas without the vibrations the rate was 0.0002 in./min. and the roughness 63-80. Sheet W was **etched** electrolytically with vibrations, 6 v., and 3-6 amp./dm.2 in 10% NaOH soln. to a depth of 0.035 in. in 10 min., but without vibrations and the same conditions otherwise there was no metal removal.

NCL 204141000

CC 56 (Nonferrous Metals and Alloys)

ST ultrasonic **etching** metals; **etching** metals; aluminum ultrasonic **etching**; beryllium ultrasonic **etching**; boron ultrasonic **etching**; nickel ultrasonic **etching**; titanium ultrasonic **etching**; tungsten ultrasonic **etching**

IT Magnesium alloys, containing
(aluminum-, ultrasonic **etching** of)

IT Wire
(**etching** of metal, ultrasonic)

IT Titanium alloys, base
(**etching** of, ultrasonic)

IT Ultrasound, chemical and physical effects
(machining of metals by **etching** in presence of)

IT Metals, uses and miscellaneous
(machining of, by ultrasonic **etching**)

IT Aluminum alloys, base
(magnesium-, ultrasonic **etching** of)

IT Coating materials
(nickel, stripping from beryllium wire by ultrasonic **etching**)

IT Surface

(roughness of boron filaments, ultrasonic **etching** for improved)

IT **Etching**
(ultrasonic, of metals)

IT 7440-42-8, uses and miscellaneous
(machining of filaments of, by ultrasonic **etching** for improved surface finish)

IT 7440-33-7, uses and miscellaneous 7440-41-7, uses and miscellaneous
(machining of sheets of, by ultrasonic **etching**)

L26 ANSWER 48 OF 56 HCA COPYRIGHT 2003 ACS on STN
70:14079 Hardening of K8 optical glass. Kuznetsov, A. Ya.; Orlova, L. A.; Krasikov, S. E. (USSR). Optiko-Mekhanicheskaya Promyshlennost, 35(7), 51-4 (Russian) 1968. CODEN: OPMPAQ. ISSN: 0030-4042.

AB The mech. strength of K8 optical glass was increased by a treatment with **HF** solns. The **etched** surface was then **polished**. A preliminary treatment by a 0.5N soln. of NaOH at 50.degree. for 10 min., and then by a mixt. of **HF** + **H3PO4** at room temp. for 5 min. was made. The glass was washed with distd. **H2O** and then treated by a mixt. of 5.25N soln. of **HF** + a 6.0N soln. of **H2SO4** for 12 min. The thickness of the removed layer was 20 m.mu.. The mech. strength was duplicated and the quality of the surface was not decreased.

IT **7664-39-3**, uses and miscellaneous
(glass hardening by)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

CC 57 (Ceramics)

IT Glass
(optical, hardening of, by **hydrofluoric acid**)

IT **7664-39-3**, uses and miscellaneous
(glass hardening by)

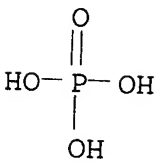
L26 ANSWER 49 OF 56 HCA COPYRIGHT 2003 ACS on STN
66:107218 Hydrogen absorption by very strong steel during chemical descaling. Glasgow, I. R.; Rostron, A. J.; Thomson, G. (Arthur D. Little Res. Inst., Musselburgh, UK). Corrosion Science, 6(11-12), 469-82 (English) 1966. CODEN: CRRSAA. ISSN: 0010-938X.

AB A study of chem. descaling of very strong steels where H2 absorption is <0.1 ppm. was aimed at formulating a nonembrittling chem. treatment for such materials, which included steels contg. C 0.33, Mn 0.72, Ni 0.64, Cr 3.31, Mo 0.88, and V 0.18% and C 0.37, Si 1.58, Mn 1.57, Ni 1.77, Cr 0.11, Mo 0.44, and V 0.21% hardened to give a strength of 115-120 tons/in.2; a limited amt. of work was also carried out on a 3% Cr-Mo-V steel (R.S.140). Data are given for reducing acids as 20 wt.% **aq**. HCl, **H2SO4**, and

H3PO4, the latter with addns. of Na2HPO4, pyrophosphoric acid, for the effect of coupling with Pt, for reducing acids plus proprietary restrainers, for alk. derusters, and Na glucoheptonate, for fused salts, for reducing acids plus oxidant mixts. including MnO4-, Fe3+, HNO3 + **H2SO4**, **H3PO4** or **HF**, CrO42-/**H2SO4** CrO42-/PO43, H2O2/oxalic acid, etc. Dil. reducing acids were unsatisfactory owing to too much H2-uptake by the steel; Pt coupling did not reduce H2 uptake. All the acid mixts. with proprietary restrainers also failed a <0.1 ppm. H2 criterion and some descaled ineffectively. Alk. derusters produced little addnl. H2 and merited further study; descaling in 20-30 wt.% **aq**. solns. at 75-95.degree. was very slow, but higher concns. and added NaOH improved the descaling rate. An oxidant addn. to a H2-producing acid did not generally decrease H2 abosrption; HNO3-contg. chem. **polishing** mixts. give a bright surface finish and 0.1-0.2 ppm. H2 while CrO42-/SO42- mixts. attacked less. H2O2/oxalic acid mixts. appeared useful for improving the surface of steel descaled in more aggressive media rather than for descaling. The evolution of H2 during **polishing** in pyrophosphoric acid was noteworthy, as chem. **polishing** generally takes place only with mixts. contg. an oxidant capable of giving an oxide layer on the metal, while the range of potential during anodic **polishing** in electrolyte solns. is usually greater than the lowest value at which oxide forms. With pyrophosphoric acid, the absence of surface **etching** may be ascribed to the randomizing effect of a thin solid layer of salt or to a viscous electrolyte layer but not to a surface oxide layer. 20 references.

IT **7664-38-2**, uses and miscellaneous **7664-39-3**, uses and miscellaneous **7664-93-9**, reactions
(steel descaling in nitric acid solns. of, with hydrogen absorption inhibition)

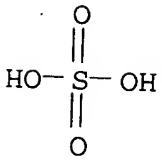
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 55 (Ferrous Metals and Alloys)
IT **7664-38-2**, uses and miscellaneous **7664-39-3**, uses and miscellaneous **7664-93-9**, reactions
(steel descaling in nitric acid solns. of, with hydrogen absorption inhibition)
IT 144-62-7, uses and miscellaneous
(steel **polishing** in hydrogen peroxide solns. of, with hydrogen absorption inhibition)
IT 7722-84-1, uses and miscellaneous
(steel **polishing** in oxalic acid solns. of, with hydrogen absorption inhibition)

L26 ANSWER 50 OF 56 HCA COPYRIGHT 2003 ACS on STN
66:48219 Corrosion of garnets. Hrichova, Renata (Vysoka Skola Chem. Technol., Prague, Czech.). Sbornik Vysoke Skoly Chemicko-Technologicke v Praze, G: Mineralogie, 8, 27-46 (English) 1966. CODEN: SVCMAJ. ISSN: 0551-8407.
AB Previously published observations indicate that the surface sculptures on garnets from sedimentary rocks are not a growth phenomenon but a corrosion one. Expts. were made to produce the surface sculptures and trichytic cavities, to ascertain the probable corrosive agent, and to obtain the basic data on the soln. rate of pyrope and almandine. First of all, 2 samples of Permo-Carboniferous sandstone were **water**-extd. in Soxhlet app. at 20.degree. and 100.degree. for 100 hrs. NH3, nitrate, chloride, Fe, org. substance, and fluoride contents, pH, alky., and total hardness of the exts. were in all cases higher than that in the black solns. No sulfates were detd. in the leachates. **Polished** sections of pyropes were prepd. and **etched** with either solns. or melts of **HF**, NH4F, HCl, KOH, Na2CO3, NaHCO3, humic acids, **H3PO4**, **H2SO4**, HNO3, KOH, KHSO4, FeCl3, Na2B4O7, and KOH + Na2O2 (3:1) for various periods of time, ranging from 20 min. to 16 months, according to the corrosion ability of individual agents. Besides pyropes also other varieties of garnets (grossularite, spessartine, and andradite) and the minerals accompanying garnet in sediments (rutile, tourmaline, zircon, and quartz) were subjected to **etching**. The treated grains were observed under a binocular magnifier. Rutile, tourmaline, and zircon remained unaltered, quartz was dissolved slowly in **HF**, and a clouded surface was formed after HCl **etching**. The corroded grains of pyrope were always covered with a white coating. The shape and size of surface sculptures and trichytic cavities obtained on pyropes by artificial **etching** correspond with those observed on the grains of untreated pyropes

from sediments. Owing to the fact that in natural conditions a simultaneous action of different chem. agents is to be considered, an expt. with the **etching** in a mixt. of dil. salt solns. was carried out. The **etching** soln. was prepd. in accordance with the compn. of the above exts. from sandstone. After 600 hrs. of **etching** at 70.degree. only clouded surfaces on several grains were observed. The corrosive origin of surface sculptures and trichytic cavities was confirmed by the results of the pyrope irradn. with thermal neutrons. It was proved that trichytic cavities in pyropes were due to the spontaneous fission of trace amts. of radioactive elements. The reaction kinetics of pyrope and almandine dissoln. in **HF** was studied and the activation energy of this process was calcd. to be 10.5 kcal./mole for pyrope and 12.2 kcal./mole for almandine.

CC 53 (Mineralogical and Geological Chemistry)

IT Solution
(kinetics of, of almandite and pyrope in **hydrogen fluoride**)

IT Activation energy of solution
(of almandite and pyrope in **hydrogen fluoride**)

IT 1302-68-7
(activation energy of dissoln. in **hydrogen fluoride**, trichytic cavities and)

IT 1302-62-1
(reaction kinetics of dissoln. of, in **hydrogen fluoride**, trichytic cavities and)

L26 ANSWER 51 OF 56 HCA COPYRIGHT 2003 ACS on STN

65:105780 Original Reference No. 65:19692a-b **Mixture** for cleaning electrodes of electrolytic condensers. Bubenicek, Milan; Konicek, Lubos CS 117294 19660115, 2 pp. (Unavailable). APPLICATION: CS 19630725.

AB The addn. of citric or oxalic acid to HNO3 facilitates the removal of Fe and Cu contaminants which have deposited on the Al, Ti, Ta, Zr, or Nb sheets during the **etching** manufg. process. The above org. acids form Fe and Cu complex compds. and prevent their redn. or deposition on the Al electrode surfaces from the HNO3 cleansing bath. The addn. of HCl, **H2SO4**, or **H3PO4** accelerates the effect; **HF** also removes Si. Thus, a bath, contg. HNO3 5, HCl 5, and citric acid 5%, decreases in 2 min. at 40.degree. the surface Fe content of Al anode metals from 20-50 to 0.25-0.4 mg./m.2 and allows the use of lower quality Al in the manuf. of high output condensers.

IC H01G

CC 15 (Electrochemistry)

IT Electric capacitors
(cleaning after **etching**)

L26 ANSWER 52 OF 56 HCA COPYRIGHT 2003 ACS on STN

61:37461 Original Reference No. 61:6526a-c Improvement of the magnetic properties of ferromagnetic ferrite sinter bodies. Roess, Erich;

Hanke, Ingrid (Siemens & Halske A.-G.). DE 1167248 19640402, 3 pp. (Unavailable). APPLICATION: DE 19620315.

AB A method to remove the external layers on sinter bodies giving rise to low permeabilities and high hysteresis losses is described. The external layers of sintered ferrite bodies were removed by **etching** 1-3 hrs. at 130.degree. with a mixt. of 1 part concd. **H3PO4** and 1 part **H2SO4**, or 15 min. with boiling 50% **H2SO4**, or 5-15 min. at 160-200.degree. with 85% **H3PO4**. After **etching**, the bodies were dipped 20-40 sec. into 20-50% **aq. HF**, neutralized with NH3, and washed with distd. **H2O**. Thus, bodies with **smooth** surfaces, a high permeability, a low loss factor, and low coercive force were obtained.

IC C04B

CC 9 (Electric and Magnetic Phenomena)

IT Dielectric loss
(ferrates(III) with low, **etching** treatment for)

IT **Etching**
(of ferrates(III) for high permeability and low dielec. losses)

IT Magnetic permeability
(of ferrates(III), **etching** treatment for)

L26 ANSWER 53 OF 56 HCA COPYRIGHT 2003 ACS on STN

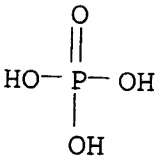
60:14977 Original Reference No. 60:2597g-h Electron microscope study of sintered aluminum powder with use of a carbon replica. Paisov, A. I. Trudy, Moskovskii Aviatsionnyi Tekhnologicheskii Institut, No. 57, 95-8 (Unavailable) 1963. CODEN: TMATAC. ISSN: 0371-9499.

AB Lab. expts. showed that for electron microscope study the single-stage C replica method is sufficient. Powdering was done at 40-60.degree. and the C replica, mech. sepd. with gelatin, did not require addnl. shading. It reproduces the structure of sintered Al powder (SAP) distinctly enough. The quality of the thin sections is important in any method of replica prepn. After careful mech. **polishing**, the thin sections were **etched** 30-60 sec. in an electrolyte contg. **H3PO4** 200 (d. 1.5 g./cc.), **H2SO4** 30 ml., and CrO3 30 g., at 65-75 .degree., c.d. 4 amp./sq. cm., and voltage 11-12 v.

IT **7664-38-2, Phosphoric acid**
(**etching** (electrolytic) of Al alloys with CrO3, **H2SO4** and)

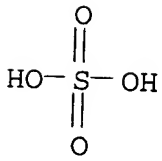
RN 7664-38-2 HCA

CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **7664-93-9, Sulfuric acid**
(in aluminum alloy electrolytic **etching** with Al2O3)

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 20 (Nonferrous Metals and Alloys)
IT **Etching**
(electrolytic, of Al alloys with Al2O3)
IT Chromium oxide, CrO3, mixt. with **aq. HF**
(with **H3PO4** and **H2SO4** in electrolytic **etching** of Al alloys with Al2O3)
IT **7664-38-2, Phosphoric acid**
(**etching** (electrolytic) of Al alloys with CrO3, **H2SO4** and)
IT **7664-93-9, Sulfuric acid**
(in aluminum alloy electrolytic **etching** with Al2O3)

L26 ANSWER 54 OF 56 HCA COPYRIGHT 2003 ACS on STN
54:1339 Original Reference No. 54:206f-i,207a-b Chemical surface treatments for uranium and their application to uranium technology. Gore, J. K.; Pinkerton, A.; Quintana, L. J.; Seegmiller, R.; Taub, J. M. (Univ. of California, Los Alamos, NM). U.S. At. Energy Comm., LA-2190, 20 pp. (Unavailable) 1958.
AB In order to study the chem. bonding of electrodeposits to U, several surface treatments were developed. Normal purity U was used, total impurity less than 1000 p.p.m., with C, Fe, and Si being the chief impurities. To aid electrodeposition the surface of U is **etched**. One method is successive short dips in **etch**, followed by HNO3 dip long enough to dissolve **etch** products. The best **etch** is 70 wt. % EtOH contg. 80 g. SnCl2.2H2O/l. In a sequence of four 2-min. dips, with intermediate dips in 50% HNO3 at 25.degree., the reaction proceeds too fast. This **etch** works best on machined cast metal. This **etch** produces good mech. adhesion. Another but finer **etch** consists of 80 vol. % acetone contg. 22 g. CuCl2.2H2O/l. and 4 g. CuBr2/l. Four to five 5-min. dips with HNO3 dips in between are best. The **etch** degenerates rapidly, is a fire hazard, and is complicated by the easy evapn. of the acetone. CuBr2 brings out the macro grain structure of U. The org. solvents make the **etch** finer, a coarser **etch** is obtained when **aq.** solns. of SnCl2 or CuCl2 are used. Coarser surfaces are required for max. adhesion. A new **etch** was developed for a uniform fine grain: 40 g. CuCl2.4H2O/l. and 2 ml. **HF** (48%)/l. is used with four 1-min. **etching** cycles. Roughness in all 3 **etches** may be increased by shortening **etch** time per cycle and increasing the no. of cycles. The presence of 1000 p.p.m. of Mo or Al accelerates the

etch to produce a **smoothly** eroded surface. To reduce this, one can do one of the following: (1) reduce concn. of metal salt in **etching** soln., (2) reduce **etch** time per cycle, (3) lower temp., or (4) reduce no. of cycles. If U of varying impurities is used, electrolytic **etching** must be used. Photographs are included to show effect of different **etches** and 2 electrolytic **etches**: 50 vol. % **H3PO4** (85%) and 20 ml. concd. HCl/l. at 40.degree. for 10 min. at 0.5 amp./sq. in.; 125 g. trichloroacetic acid/l. and 20 ml. HCl/l. for 15 min. at 0.5 amp./sq. in. An electropolishing method was developed to prevent rapid oxidn. of U: 75 vol. % **H2SO4** (sp. gr. 1.84) is satd. with CrO3 (15 g./l.). The CrO3 is first dissolved in **H2O**, then **H2SO4** added. Best **polishing** occurs at 50.degree. and a current of 0.5 amp./sq. in. A bright **smooth** surface is obtained. This method is used for chem. milling operations as in production of fine wire and sheet, and to clean and **smooth** a badly pitted, **etched**, or oxidized surface. Electropolishing is used prior to mech. fabrication such as rolling, welding, and deep drawing.

CC 9 (Metallurgy)

IT **Etching**
(of uranium, for electroplating)

IT **Polishing**
(of uranium, oxidn. prevention in)

IT 7447-39-4, Copper chloride, CuCl2 7772-99-8, Tin chloride, SnCl2 7789-45-9, Copper bromide, CuBr2
(uranium **etching** with soln. contg., for electroplating)

L26 ANSWER 55 OF 56 HCA COPYRIGHT 2003 ACS on STN

48:35659 Original Reference No. 48:6340h-i,6341a-b Oxide growth on different crystal faces of aluminum. Basinska, S. J.; Polling, J. J.; Charlesby, A. (At. Energy Research Establishment, Harwell, UK). Acta Met., 2, 313-17 (Unavailable) 1954.

AB The theory of oxidation of certain metals such as Al, Ta, and Zr explains oxide growth as taking place by the movement of ions from the metal through the oxide to the O-rich surface. The factor limiting the rate of growth is the potential barrier at the metal-oxide interface. If this is different on different crystal faces, then the oxide thickness will also be different. Roughly circular crystals were produced in 99.99% pure Al by annealing sheet samples for 48-60 hrs. at 10.degree. below the m.p. Long, narrow crystals were obtained by cutting tensile test pieces from 0.25 in. thick sheet, annealing for 2 hrs. at 500.degree., stretching 1.7% in 2 in., then slowly heating from 150 to 620.degree. at 50.degree. per day followed by annealing for 2 days at the final temp. Crystals produced by these methods were randomly orientated, and their size varied from 0.5 sq. cm. to about 10 sq. cm. To remove surface defects, the specimens were electropolished in an electrolyte contg. **H2SO4** 40, **H3PO4** 40, and **H2O** 20 wt. % at a c.d. of about 5 amp. per sq. in. and a temp. of 94.degree.. A good **polish** was obtained in 5 min. Two **etchants** were used to develop different sets of crystal faces. The first

contained HCl 9, HNO3 3, **HF** 2, and **H2O** 5 parts. It was necessary to stir and keep the soln. at or below 0.degree.. Av. **etching** time was 90 sec. The **etchant** develops (100) cube faces. The second **etchant** was dry HCl gas generated by warming concd. HCl and drying the evolved gas with P2O5. After 30-min. exposure the specimens were washed in acetone, quickly dried, and then anodized. Oxide layer thickness was estd. from interference colors produced. No significant variation in oxide thickness was observed on different crystal faces.

CC 9 (Metallurgy and Metallography)

L26 ANSWER 56 OF 56 HCA COPYRIGHT 2003 ACS on STN

40:31048 Original Reference No. 40:6038g-i,6039a-i The chemistry and mechanism of steel pickling. Reavell, Brian N. Foundry Trade Journal, 79, 139-41,247-51 (Unavailable) 1946. CODEN: FUTJAD. ISSN: 0015-9042.

AB The principal methods for pickling steel are outlined, and the chemistry of the reactions is given. The rate of attack of the acid on the scale depends on the following principal factors: (1) concn. of acid, (2) nature of acid, (3) temp. of acid, and (4) concn. of dissolved ferrous salt. Observation shows that much of the attack on the scale is directed to the intermediate layer of the scale, which consists of ferroso-ferric oxide and finely divided Fe in intimate mixt. and the inner layer which is mainly FeO. In general, **H2SO4** is used for pickling steel prior to cold-working, such as rolling, drawing, stamping, and similar applications. HCl is used almost exclusively for pickling steel prior to galvanizing, tinning, or enameling. **H3PO4** is used to impart a protective FePO4 surface to the steel subsequent to a normal **H2SO4** pickle and prior to painting, as for example, for structural steel work. HNO3, CrO3, and **HF** are used for **etching**, for crack detection in forgings, and for descaling stainless steel. It is easiest and cheapest to use **H2SO4**; however, the resultant surface is not so **smooth** as when HCl is used. Plants for pickling steel can be divided into 2 general types: (a) batch and (b) continuous. Continuous pickling is to be prepd. where relatively long runs of articles of similar shape have to be handled. The earliest types of continuous plant were applied to the pickling of steel strip. Suitable washing and neutralizing baths follow the pickling bath in a continuous line and no agitation of the steel is necessary owing to the turbulence set up in the bath by the rapidly moving strip. Another interesting feature is the shallow depth of the acid tank, and the employment of a continuous flow of fresh acid countercurrent to the flow of steel strip. Another type of continuous pickling plant which has proved extremely satisfactory during a no. of years of operation is the spray pickling plant. This plant comprises endless belts or conveyors passing through an enclosed chamber in which acid is sprayed onto the parts to be pickled. The spray is obtained by means of jets which are fed from a pump drawing acid from the bottom of the chamber. Const. circulation of the acid takes place and filters are arranged to remove sludge and scale from the acid before

it is sprayed into the chamber. These machines can be adapted to handle a variety of shapes and are of great importance where hollow ware is being pickled, since the acid jets penetrate inside as well as covering the outside of the parts. Acid pumping does not present much difficulty if a properly designed acid pump is used. Special glandless centrifugal self-priming pumps constructed entirely of acid-resisting materials such as Keebush, silicon iron, Regulus metal, etc., are available, which can be used with complete safety in handling any of the acids used for pickling. The ordinary cast-iron centrifugal **water** pump should never be used for this purpose because of the rapid corrosion that will inevitably take place. The heating of the acid accelerates the rate of pickling and is almost universally adopted for **H2SO4** baths. In many cases, however, cold HCl is used because the fumes arising from hot HCl are both dangerous and objectionable. A recent method for heating, which has proved extremely satisfactory and economical, is the use of an external heater and a circulating pump. The external heater is generally arranged with acid-resisting metal or glass heating tubes carried in a steam shell at 50 lb. per sq. in., and the pump is designed to give a rapid circulation of the acid in the bath. The use of electrolytic heating has been referred to, and development work on this method may well cause it to be more widely adopted in the future, particularly for continuous pickling plants. The removal of the steam, acid spray, and fumes arising from the pickling tank is a matter of great importance. Unless these fumes are removed, the building in which the equipment is housed becomes difficult to work in, and the structure of the building and the equipment itself suffer rapidly through corrosion. The system that has achieved most success is known as lip drafting. It is just as important to ensure that the extn. hood, duct, and fan are made of acid-resisting material, as the pickling tank itself. When the acid in the pickling bath is spent, it must not be turned into the drain. While the neutralization of spent acid is a straight-forward reaction, for example: **H2SO4** + Ca(OH)2 .fwdarw. CaSO4 + 2H2O, and 2HCl + Ca(OH)2 .fwdarw. CaCl2 + 2H2O, the equipment needed to carry this out effectively needs as much consideration as does the pickling plant. Methods of acid recovery in the case of spent **H2SO4** are highly satisfactory. In one system, used largely in Europe, the FeSO4 in the spent acid is crystd. out and the mother liquor returned to the pickling tank for further use. Unfortunately, however, there is no simple system of recovery available for spent HCl, and it is essential that neutralization be practiced in this case. Many different construction materials have been employed for the manufacture of pickling tanks, storage tanks, and drafting systems, the commonest being timber, acid brick and tile, lead, rubber, Prodorite, and Keebush.

CC 9 (Metallurgy and Metallography)

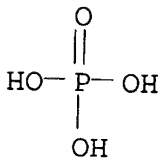
=> d l27 1-29 cbib abs hitstr hitind

L27 ANSWER 1 OF 29 HCA COPYRIGHT 2003 ACS on STN
138:264196 **Etching** process for silicon wafers and front-rear identification of silicon wafers by **polishing** front surface. Norimoto, Masashi; Takaishi, Kazushige (Sumitomo Mitsubishi Silicon Corporation, Japan). Jpn. Kokai Tokkyo Koho JP 2003100701 A2 20030404, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-296805 20010927.

AB The title process involves (1) lapping, (2) cleaning, and (3) **etching** by alternately immersing into an acid bath and a base bath, wherein the concn. of the base **etchant** is .gtoreq.8 mol/l and the acid **etching** rate at .gtoreq.0.2 .mu.m/s for front/rear total surface. The process provides **polished** substrate with mirror-**polished** front surface and moderately **polished** rear surface at desired surface conditions.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
(**etchant** mixt.; **etching** process for silicon wafers and front-rear identification of silicon wafers by **polishing** front surface)

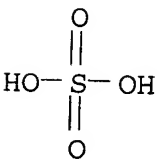
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-306
CC 76-3 (Electric Phenomena)
ST lapping cleaning acid base **etching** mirror surface silicon wafer
IT Cleaning

Etching
Polishing
(**etching** process for silicon wafers and front-rear identification of silicon wafers by **polishing** front surface)

IT 64-19-7, Acetic acid, processes 1310-58-3, Potassium hydroxide, processes 1310-73-2, Sodium hydroxide (NaOH), processes
7664-38-2, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
7697-37-2, Nitric acid, processes
(**etchant** mixt.; **etching** process for silicon wafers and front-rear identification of silicon wafers by **polishing** front surface)

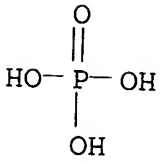
IT 7440-21-3, Silicon, properties
(wafers, **polishing** and **etching**; **etching** process for silicon wafers and front-rear identification of silicon wafers by **polishing** front surface)

L27 ANSWER 2 OF 29 HCA COPYRIGHT 2003 ACS on STN
137:389514 Chemical **etching** of lanthanum gallium silicate La3Ga5SiO14 single crystals. Takeda, H.; Okamura, S.; Shiosaki, T. (Graduate School of Materials Science, Nara Institute of Science and Technology, Ikoma, Nara, 630-0101, Japan). Journal of Materials Science Letters, 21(14), 1117-1119 (English) 2002. CODEN: JMSLD5. ISSN: 0261-8028. Publisher: Kluwer Academic Publishers.

AB Single crystals of La3Ga5SiO14 were grown in a Czochralski furnace. They were cut perpendicular to the X, Z, and Y elec. rectangular axes, corresponding to the crystallog. a and c axes and the [120] direction, resp. The cut and **polished** samples were chem. **etched** at 80.degree. for 1-4 h using the following **etchants**: 12 mol/L HCl, 12 mol/L **HF**, 14 mol/L HNO3, 15 mol/L **H3PO4**, and 18 mol/L **H2SO4**. The **etching** rates were calcd., and the surface morphol. was investigated in a polarized microscope in the reflection mode. The products resulting from the **etching** processes were analyzed by XRD and x-ray fluorescence anal. For all directions, microscopically **smooth** surfaces were obtained with a mixt. of the HCl + **HF etching** solns. The HCl soln. was a selective **etchant** to observe the dislocations on the +X and -X cut surfaces.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(chem. **etching** of La3Ga5SiO14 single crystals)

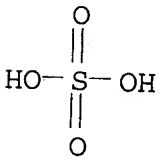
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



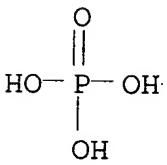
CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 75
ST lanthanum gallium silicate crystal chem **etching** surface morphol
IT **Etching**
Etching kinetics
(chem. **etching** of La3Ga5SiO14 single crystals)
IT Surface structure
(of La3Ga5SiO14 single crystals after chem. **etching**)
IT 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrofluoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses
(chem. **etching** of La3Ga5SiO14 single crystals)
IT 82642-19-1, Gallium lanthanum silicate (Ga5La3SiO14)
(chem. **etching** of La3Ga5SiO14 single crystals)

L27 ANSWER 3 OF 29 HCA COPYRIGHT 2003 ACS on STN
137:132694 Chemical **etching** of NiFe and IrMn thin films.
Byun, Yo Han; Kim, Hye In; Song, Young Soo; Yoon, Jin Koo; Chung, Chee Won (School of Chemical Engineering, Inha University, Incheon, 402-751, S. Korea). Journal of Industrial and Engineering Chemistry (Seoul, Republic of Korea), 8(3), 257-261 (English) 2002. CODEN: JIECFI. ISSN: 1226-086X. Publisher: Korean Society of Industrial and Engineering Chemistry.
AB Wet chem. **etching** of NiFe and IrMn magnetic thin films was studied by using **etchants** contg. HNO3, HCl, **H2SO4**, **H3PO4** and **HF** in terms of **etch** rate

and **etch** profile. In the case of NiFe films, faster **etching** was attained in HNO3 soln. while HCl soln. showed **smooth etched** surface. The white materials on **etched** surface were obsd. when NiFe films were **etched** in HCl soln. They were analyzed by XPS and were confirmed to be the **etch** residues contg. NiFe and Cl. IrMn films showed fast **etching** for all of the **etchants** used in this study and the partial cracks of the films were obsd. in HNO3 and HCl solns. while **HF** soln. **etched** the films **smooth**.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
(chem. **etching** of NiFe and IrMn thin films)

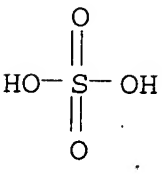
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 76-2 (Electric Phenomena)
ST iron nickel iridium manganese semiconductor chem **etching**
IT **Etching**
Etching kinetics
(chem. **etching** of NiFe and IrMn thin films)
IT 7647-01-0, Hydrogen chloride, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrogen fluoride**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes 12062-87-2, FeNi 12142-03-9, Iridium, compd. with manganese (1:1)
(chem. **etching** of NiFe and IrMn thin films)

L27 ANSWER 4 OF 29 HCA COPYRIGHT 2003 ACS on STN
136:405136 Studies on the electrolytic coloring of anodic oxidation film of aluminum alloys for golden color. Guo, Xianluo; Xiao, Xin; Yi, Xiang (Department of Chemistry and Chemical Engineering, Hunan Institute of Engineering, Xiangtan, 411101, Peop. Rep. China). Diandu Yu Tushi, 20(6), 28-31 (Chinese) 2001. CODEN: DYTUEM. ISSN: 1004-227X. Publisher: Guangzhoushi Erqinggongye Yanjiuso.

AB A process for the electrolytic coloring of anodic oxidn. film on Al alloys for golden color was proposed. The process comprises degreasing in soln. contg. NaOH 5-10, Na2CO3 15-30, Na3PO4.cntdot.12H2O 40-60 g L-1 at 60- 80.degree. for 30-90 s, alkali **etching** in soln. contg. NaOH 50 g L-1 at room temp. for 2-5 min, **polishing** in soln. contg. **H3PO4** 75-85%, **HF** 3-5%, HNO3 5-8% (vol. ratio) at 80-90.degree. for 20-40 s, anodizing in soln. contg. **H2SO4** 180-220 g L-1 at 15-25.degree. for 25-35 min, voltage 15-18 V, and c.d. 0.8-1.5 A/dm2, electrolytic coloring in soln. contg. AgNO3 0.5-1.2, **H2SO4** 15-25, and stabilizer 15-25 g L-1 at 15-40.degree. for 40-80 s, alternating voltage 5-9 V. The effect of bath components (AgNO3, stabilizer, and **H2SO4** concn.), operation conditions (coloring voltage and time, soln. temp., and distance of anode and cathode) on the properties of colored film was studied. The optimum bath components and operation conditions were obtained as follows: AgNO3 1.0, stabilizer 20, **H2SO4** 15 g L-1, alternating voltage 5.5-6.5 V, coloring time 1 min, and distance of anode and cathode 200-250 mm. Factors affecting the colored results were also discussed. The obtained anodic oxidn. films showed good corrosion and wear resistance, and light permanency, and the bath was stable.

CC 56-6 (Nonferrous Metals and Alloys)

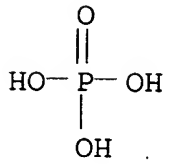
L27 ANSWER 5 OF 29 HCA COPYRIGHT 2003 ACS on STN
134:240605 Corrosion prevention. Effect of a surface treatment on the stability of austenitic refined steel. Bohme, Olaf; Piesslinger-Schweiger, Siegfried; Abedian, Razmik (Germany). Chemie-Anlagen + Verfahren, 34(1), 64-65 (German) 2001. CODEN: CHAVBZ. ISSN: 0009-2800. Publisher: Konradin Verlag Robert Kohlhammer.

AB The corrosion resistance of cold rolled austenitic refined steel sheets after different surface treatments was compared using SEM and current-potential measurements in 0.1 M sodium sulfate and in chloride solns. Surface treatments include sand blasting, **grinding**, **etching** in immersion baths using **HF**, HNO3, **H2SO4**, **H3PO4**, and others. A pos. effect of micro roughness on corrosion resistance was detd.

IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
(**etchant**; effect of surface treatment on corrosion of austenitic stainless steels)

RN 7664-38-2 HCA

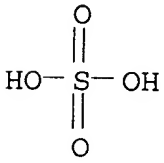
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



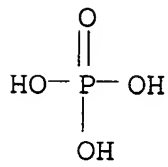
CC 55-10 (Ferrous Metals and Alloys)
IT **Etching**
Grinding (machining)
Pickling
Sandblasting
Surface roughness
(effect of surface treatment on corrosion of austenitic stainless steels)
IT **Polishing**
(electrochem.; effect of surface treatment on corrosion of austenitic stainless steels)
IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
7697-37-2, Nitric acid, processes
(**etchant**; effect of surface treatment on corrosion of austenitic stainless steels)

L27 ANSWER 6 OF 29 HCA COPYRIGHT 2003 ACS on STN
133:246413 Glass substrates for magnetic disks and fabrication thereof. Ikeda, Hiroshi; Matsuno, Yoshihiro; Watanabe, Takeo (Nippon Sheet Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000251253 A2 20000914, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-44605 19990223.
AB The title fabrication involves scrub-**etching** of the magnetic recording surface of the substrates by a **polishing** pad with an acidic agent. The **polishing** pad is a round

rotating disk attached by stripe projections. The acidic agent may be **HF**, **H2SO4**, **H3PO4**, HNO3, and/or H2SiF6.

IT **7664-38-2**, **Phosphoric acid**, properties
7664-39-3, **Hydrogen fluoride**, properties
7664-93-9, **Sulfuric acid**, properties
(scrub-**etching** agent; glass substrates for magnetic disks and fabrication thereof)

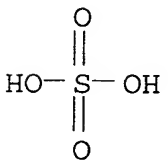
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



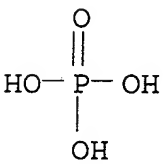
IC ICM G11B005-84
ICS C03C019-00; G11B005-73
CC 77-8 (Magnetic Phenomena)
ST acid scrub **etching** magnetic recording disk substrate **polishing** pad
IT **Polishing**
(acidic agent for; glass substrates for magnetic disks and fabrication thereof)
IT **Etching**
(scrub; glass substrates for magnetic disks and fabrication thereof)
IT **7664-38-2**, **Phosphoric acid**, properties
7664-39-3, **Hydrogen fluoride**, properties
7664-93-9, **Sulfuric acid**, properties
7697-37-2, Nitric acid, properties 16961-83-4, Hydrogen hexafluorosilicate (H2SiF6)
(scrub-**etching** agent; glass substrates for magnetic disks and fabrication thereof)

L27 ANSWER 7 OF 29 HCA COPYRIGHT 2003 ACS on STN
133:46561 Pretreatment of gray cast iron for hard chromium electroplating. Afshar, A. (Department of Metallurgical Engineering, Sharif University of Technology, Tehran, Iran). International Journal of Engineering, 13(2), 81-84 (English) 2000. CODEN: IJENFD. ISSN: 1025-2495. Publisher: National Center for Scientific Research.

AB From the standpoint of processing, hard chromium layer plate may be applied to steels, cast iron, aluminum and nickel base alloys. Cast iron can be plated provided that the surface is capable of conducting the required current and is reasonably free of voids, pits, gross silicate inclusions, and massive segregation. There are many difficulties arising from graphite phase and deposition of hydrogen on the surface of gray cast iron (G.C.I). To obtain desired hard chromium coating with acceptable adhesion, special pretreatments should be used. In this paper the surfaces of G.C.I. were prepd. in **sulfuric acid**, chromic **acid** + SO4- by anodic **etching phosphoric acid** + **sulfuric acid** soln. by electropolishing and **sulfuric acid** + fluoridric soln. by dipping in the different conditions. The best results for removal of graphite from the surface of specimens are obtained after anodic **etching** in 60% **H2SO4** soln.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrogen fluoride**, uses
7664-93-9, **Sulfuric acid**, uses
(surface treatment of gray cast iron prior to hard chromium electroplating)

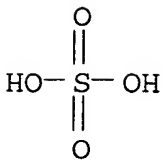
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



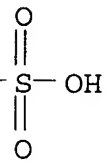
CC 55-6 (Ferrous Metals and Alloys)
Section cross-reference(s): 72
ST **etching** electrochem gray cast iron chromium electroplating; electropolishing gray cast iron chromium electroplating; **polishing** electrochem gray cast iron chromium electroplating
IT **Etching**
Polishing
(electrochem.; surface treatment of gray cast iron prior to hard chromium electroplating)
IT Electrodeposition
Etching
(surface treatment of gray cast iron prior to hard chromium electroplating)
IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrogen fluoride**, uses
7664-93-9, **Sulfuric acid**, uses
7738-94-5, Chromic acid (H2CrO4)
(surface treatment of gray cast iron prior to hard chromium electroplating)

L27 ANSWER 8 OF 29 HCA COPYRIGHT 2003 ACS on STN
132:300731 Growth optimization for p-n junction placement in the integration of heterojunction bipolar transistors and quantum well modulators on InP. Silva, M. T. Camargo; Zucker, J. E.; Carrion, L. R.; Joyner, C. H.; Dentai, A. G. (Barretos Institute of Technology, Barretos, 14780-270, Brazil). IEEE Journal of Selected Topics in Quantum Electronics, 6(1), 26-30 (English) 2000. CODEN: IJSQEN. ISSN: 1077-260X. Publisher: Institute of Electrical and Electronics Engineers.
AB We demonstrate the necessary conditions for successful metalorg. vapor phase epitaxy (MOVPE) growth of InGaAs-InP-based heterojunction bipolar transistor (HBT) layers on p-i-n InGaAsP-InGaAsP quantum-well electroabsorption modulators. Optimization of the doping profile in the uppermost p-cladding layer of the modulator stack was achieved to obtain suitable p-n junction placement after the final HBT growth. Photoluminescence, electron beam induced current traces, scanning electron microscope photographs, and photocurrent spectra of **etched** diode mesa were utilized to study this process. In addn., the procedure described here will be useful in fine-tuning many other integration designs that include p-n junctions.
IT **7664-39-3**, **Hydrogen fluoride**, uses
(deoxidizer; in heterojunction bipolar transistors and quantum

well modulators fabrication)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT **7664-93-9, Sulfuric acid**, uses
(**etchant**; in heterojunction bipolar transistors and quantum well modulators fabrication)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



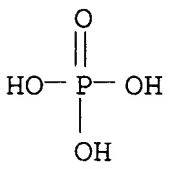
CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75, 76
IT **7664-39-3, Hydrogen fluoride**, uses
(deoxidizer; in heterojunction bipolar transistors and quantum well modulators fabrication)
IT 7647-01-0, Hydrochloric acid, uses
(**etchant**; InP for in heterojunction bipolar transistors and quantum well modulators fabrication **etched** in soln. contg. **H3PO4** and)
IT **7664-93-9, Sulfuric acid**, uses
(**etchant**; in heterojunction bipolar transistors and quantum well modulators fabrication)
IT 10035-10-6, Hydrobromic acid, uses
(**polisher**; films for heterojunction bipolar transistors and quantum well modulators fabrication **polished** in soln. contg.)

L27 ANSWER 9 OF 29 HCA COPYRIGHT 2003 ACS on STN
132:244041 Microporous microchannel plates and method of manufacturing same. Beetz, Charles P., Jr.; Boerstler, Robert W.; Steinbeck, John; Winn, David R. (NanoSciences Corporation, USA). U.S. US 6045677 A 20000404, 14 pp. (English). CODEN: USXXAM. APPLICATION: US 1997-807469 19970227. PRIORITY: US 1996-12389 19960228.
AB A microchannel plate and method of manufg. same is provided. The microchannel plate includes a plate consisting of an anodized material and a plurality of channels which are formed during the anodization of the material and extend between the two sides of the plate. Electrodes are also disposed on each side of the plate for generating an elec. field within the channels. Preferably, the material is alumina and the channels are activated such that the

channel walls are conductive and highly secondary emissive.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrogen fluoride**, uses
7664-93-9, **Sulfuric acid**, uses
(microporous microchannel plates and method of manufg. same using)

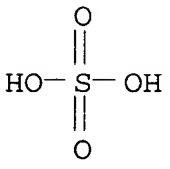
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



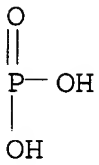
IC ICM H01J043-04
ICS C25D011-02
NCL 205050000
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 72
ST microporous microchannel plate anodizing **etching**
IT **Polishing**
(electrochem.; microporous microchannel plates and method of manufg. same using)
IT Cathodes
Electrodes
Etching
(microporous microchannel plates and method of manufg. same using)
IT 7601-90-3, Perchloric acid, uses
(electrochem. **polishing** soln.; microporous microchannel plates and method of manufg. same using)
IT 64-19-7, Acetic acid, uses 144-62-7, Oxalic acid, uses 1310-73-2, Caustic soda, uses **7664-38-2**,

Phosphoric acid, uses **7664-39-3**,
Hydrogen fluoride, uses **7664-93-9**,
Sulfuric acid, uses 7697-37-2, Nitric acid, uses
7738-94-5, Chromic acid (H2CrO4)
(microporous microchannel plates and method of manufg. same using)

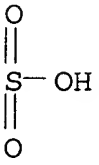
L27 ANSWER 10 OF 29 HCA COPYRIGHT 2003 ACS on STN
131:152697 Device and method for wet-**etching** of semiconductor disks. Sumnitsch, Franz; Wagner, Gerald (SEZ Semiconductor-Equipment Zubehoer fuer die Halbleiterfertigung A.-G., Austria). Ger. Offen. DE 19805525 A1 19990819, 8 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1998-19805525 19980211.

AB An **etching** medium contains an agent which affects viscosity, surface energy, and/or vapor pressure of the **etching** medium in addn. to **HF** or a (**HF** + NH4F) combination which is effective for wet **etching** of semiconductor disks, esp. Si wafers. During **etching**, a SiO2 layer is removed from the upper side, an edge, and a defined edge area of the lower side of the Si wafer. Under-**etching** in a defined area attains that the edge of the SiO2 layer remaining on the bottom side of the wafer is **smooth**.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(in **etching** medium for silicon wafers)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3**, **Hydrofluoric acid**, processes
(in wet-**etching** of silicon wafers)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

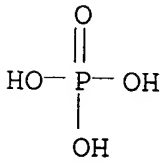
HF

IC ICM H01L021-304
ICS C23F001-16
CC 76-3 (Electric Phenomena)
ST wet **etching** semiconductor; silicon wafer wet **etching**
IT **Etching**
(of semiconductor disks)
IT Semiconductor devices
(wet-**etching** of)
IT 50-21-5, Lactic acid, uses 56-81-5, Glycerol, uses 64-17-5, Ethanol, uses 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses 67-63-0, Isopropanol, uses 67-64-1, Acetone, uses 71-36-3, Butanol, uses 77-92-9, Citric acid, uses 79-09-4, Propionic acid, uses 107-21-1, Ethylene glycol, uses 107-92-6, Butyric acid, uses 111-46-6, Diethylene glycol, uses 124-38-9, Carbon dioxide, uses 141-78-6, Acetic acid ethyl ester, uses 144-55-8, Sodium bicarbonate, uses 144-62-7, Oxalic acid, uses 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses
(in **etching** medium for silicon wafers)
IT **7664-39-3**, **Hydrofluoric acid**, processes
12125-01-8, Ammonium fluoride
(in wet-**etching** of silicon wafers)
IT 7440-21-3, Silicon, processes
(wet-**etching** of silicon wafers)

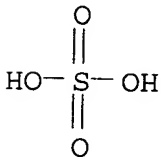
L27 ANSWER 11 OF 29 HCA COPYRIGHT 2003 ACS on STN
129:22092 Dry and wet **etching** of ScAlMgO4. Brandle, C. D.; Ren, F.; Lee, J. W.; Pearton, S. J. (Bell Lab., Lucent Technol., Murray Hill, NJ, 07974, USA). Solid-State Electronics, 42(3), 467-469 (English) 1998. CODEN: SSELA5. ISSN: 0038-1101. Publisher: Elsevier Science Ltd..
AB ScAlMgO4 is a potential substrate for GaN epitaxy. The authors have compared three different plasma chemistries for dry patterning of ScAlMgO4: Cl2, F2 or CH4/H2 based chemistries. Significant **etch** rates (<1000 .ANG. min-1) were obtained only with Cl2 (and BCl3), and the rates were directly proportional to both ion energy and ion d. in the plasma. Since the **etching** is ion-assisted under all conditions, extremely anisotropic sidewalls are produced on patterned features. Of the wet chemistries studied at 300 K, only **HF** wet chem. solns. **etch** ScAlMgO4, though HNO3 can be used at .gtoreq. 150.degree. for removal of substrate **polishing** damage.
IT **7664-39-3**, **Hydrogen fluoride**, reactions
(dry and wet **etching** of aluminum magnesium scandium oxide substrates)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT **7664-38-2, Phosphoric acid,**
miscellaneous **7664-93-9, Sulfuric acid**
, miscellaneous
(lack of **etching** of aluminum magnesium scandium oxide with)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



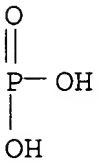
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



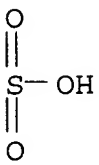
CC 76-11 (Electric Phenomena)
Section cross-reference(s): 67
ST wet dry **etching** magnesium scandium aluminate
IT **Etching**
Etching kinetics
(dry and wet **etching** of aluminum magnesium scandium oxide substrates)
IT **Etching**
Etching kinetics
(plasma; dry and wet **etching** of aluminum magnesium scandium oxide substrates)
IT Ceramics
(substrates; dry and wet **etching** of aluminum magnesium scandium oxide substrates)
IT 7440-37-1, Argon, uses
(dry and wet **etching** of aluminum magnesium scandium oxide substrates)
IT 74-82-8, Methane, reactions 1333-74-0, Hydrogen, reactions 2551-62-4, Sulfur hexafluoride **7664-39-3, Hydrogen fluoride**, reactions 7697-37-2, Nitric acid, reactions 7782-41-4, Fluorine, reactions 7782-50-5, Chlorine, reactions 10294-34-5, Boron chloride (BCl3)
(dry and wet **etching** of aluminum magnesium scandium oxide substrates)

IT 120305-02-4, Aluminum magnesium scandium oxide (AlMgScO4)
(dry and wet **etching** of aluminum magnesium scandium oxide substrates)
IT 7647-01-0, Hydrogen chloride, miscellaneous **7664-38-2**, **Phosphoric acid**, miscellaneous **7664-93-9**, **Sulfuric acid**, miscellaneous
(lack of **etching** of aluminum magnesium scandium oxide with)

L27 ANSWER 12 OF 29 HCA COPYRIGHT 2003 ACS on STN
128:315325 Visualization of inhomogeneities and structural defects in potassium titanyl phosphate crystals by chemical **etching**. Tsvetkov, E. G.; Konovalova, T. I.; Yurkin, A. M. (Siberian Division, Institute of Mineralogy and Petrography, Russian Academy of Sciences, Novosibirsk, 630090, Russia). Inorganic Materials (Translation of Neorganicheskie Materialy), 34(4), 377-381 (English) 1998. CODEN: INOMAF. ISSN: 0020-1685. Publisher: MAIK Nauka/Interperiodica Publishing.
AB The **H3PO4**, HCl, and **H2SO4** acids, ensuring chem. **polishing** and/or selective **etching** of K titanyl phosphate crystals, can be used to reveal various structural defects and inhomogeneities. The 2H2SO4 + 3HF mixt. is a versatile selective **etchant** for all surface orientations, regardless of their structural state. The results of **etching** a crystal fragment in this mixt. are presented to illustrate the possibility of revealing inhomogeneities.
IT **7664-38-2**, **Phosphoric acid**, processes
7664-93-9, **Sulfuric acid**, processes
(**etching** in visualization of inhomogeneities and structural defects in potassium titanyl phosphate crystals)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3**, **Hydrogen fluoride**, processes
(**etching** with **sulfuric acid**-

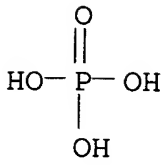
hydrofluoric acid mixt. in visualization of inhomogeneities and structural defects in potassium titanyl phosphate crystals)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

CC 75-3 (Crystallography and Liquid Crystals)
Section cross-reference(s): 73, 76
ST potassium titanyl phosphate defect inhomogeneity **etching**
IT Ferroelectric domain
(visualization in potassium titanyl phosphate crystals by chem. **etching**)
IT **Etching**
(visualization of inhomogeneities and structural defects in potassium titanyl phosphate crystals by chem.)
IT Crystal defects
Crystal dislocations
Heterogeneity
(visualization of inhomogeneities and structural defects in potassium titanyl phosphate crystals by chem. **etching**)
IT 7647-01-0, Hydrogen chloride, processes **7664-38-2**, **Phosphoric acid**, processes **7664-93-9**, **Sulfuric acid**, processes
(**etching** in visualization of inhomogeneities and structural defects in potassium titanyl phosphate crystals)
IT **7664-39-3**, **Hydrogen fluoride**, processes
(**etching** with **sulfuric acid**-**hydrofluoric acid** mixt. in visualization of inhomogeneities and structural defects in potassium titanyl phosphate crystals)
IT 12690-20-9, Potassium titanyl phosphate
(visualization of inhomogeneities and structural defects in potassium titanyl phosphate crystals by chem. **etching**)

L27 ANSWER 13 OF 29 HCA COPYRIGHT 2003 ACS on STN
127:228421 Manufacturing semiconductor wafers. Kato, Tadahiro; Masumura, Hisashi; Kudo, Hideo (Shin-Etsu Handotai Company Limited, Japan). Eur. Pat. Appl. EP 791953 A2 19970827, 11 pp. DESIGNATED STATES: R: DE, FR, GB. (English). CODEN: EPXXDW. APPLICATION: EP 1997-101468 19970130. PRIORITY: JP 1996-14842 19960131; JP 1997-8169 19970121.
AB A method of manufg. semiconductor wafers includes a double-sided primary **polishing** step, a back side **etching** step, and a single-sided mirror **polishing** step.
IT **7664-38-2**, **Phosphoric acid**, processes
7664-39-3, **Hydrogen fluoride**, processes
7664-93-9, **Sulfuric acid**, processes
(**etching** of semiconductor wafers by)
RN 7664-38-2 HCA

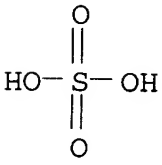
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



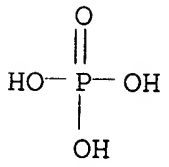
IC ICM H01L021-302
CC 76-3 (Electric Phenomena)
ST **polishing etching** semiconductor wafer manuf
IT **Etching**
Polishing
(in manuf. of semiconductor wafers)
IT 64-19-7, Acetic acid, processes **7664-38-2**, **Phosphoric acid**, processes **7664-39-3**, **Hydrogen fluoride**, processes **7664-93-9**, **Sulfuric acid**, processes 7697-37-2, Nitric acid, processes
(**etching** of semiconductor wafers by)
IT 7440-21-3, Silicon, processes
(**polishing** and **etching** of wafers of)

L27 ANSWER 14 OF 29 HCA COPYRIGHT 2003 ACS on STN
122:176643 **Etched** sputtering target and method, and preparation of the target. Mintz, Donald M. (Applied Materials, Inc., USA). Eur. Pat. Appl. EP 634498 A1 19950118, 9 pp. DESIGNATED STATES: R: BE, CH, DE, ES, FR, GB, IT, LI, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1994-110182 19940630. PRIORITY: US 1993-92730 19930716.
AB A sputtering target having plastically deformed grains is wet **etched** or electrochem. **polished** to remove at least a portion of the plastically deformed grains from the surface of the target. After **etching**, the target is mounted in a sputtering zone, and material is sputtered from the target onto a

substrate, esp. for integrated-circuit interconnections.

IT **7664-38-2**, **Phosphoric acid**, reactions
7664-39-3, **Hydrogen fluoride**, reactions
7664-93-9, **Sulfuric acid**, reactions
(**etching** of sputtering targets by)

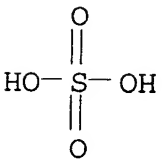
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C23C014-34
CC 76-14 (Electric Phenomena)
Section cross-reference(s): 75
ST **etched** sputtering target; electrochem **polishing** sputtering target; integrated circuit interconnection sputter deposition
IT **Etching**
(of sputtering targets for removal of plastically deformed grains)
IT **Polishing**
(electrochem., of sputtering targets for removal of plastically deformed grains)
IT Sputtering
(targets, **etching** or electrochem. **polishing** for removal of plastically deformed grains from surfaces of)
IT 64-19-7, Acetic acid, reactions 7647-01-0, Hydrogen chloride, reactions **7664-38-2**, **Phosphoric acid**, reactions **7664-39-3**, **Hydrogen fluoride**, reactions **7664-93-9**, **Sulfuric acid**, reactions 7697-37-2, Nitric acid, reactions 16872-11-0
(**etching** of sputtering targets by)

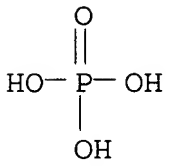
IT 7429-90-5, Aluminum, uses 7440-32-6, Titanium, uses 12642-02-3
(**tching** or electrochem. **polishing** of sputtering targets from)

L27 ANSWER 15 OF 29 HCA COPYRIGHT 2003 ACS on STN
120:233206 Exposure of boundaries in epitaxial structures based on AIIIBV. Vlasukova, L. A. (Beloruss. Gos. Univ., Minsk, Belarus). Neorganicheskie Materialy, 29(12), 1597-600 (Russian) 1993. CODEN: NMATEI. ISSN: 0002-337X.

AB Different **etchant** solns., were tested for revealing film boundaries in GaAs and InP epitaxial films. The optimum **etching** conditions were detd. The effect of film substrate conditions on the **etching** is described. A comparison was made between anodic oxidn. and selective **etching** and the results used to explain the formation of pn junctions during epitaxy.

IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrogen fluoride**, uses
7664-93-9, **Sulfuric acid**, uses
(**etchant**, for exposure of boundaries in gallium arsenide layers)

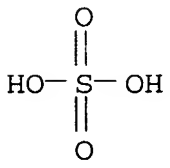
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



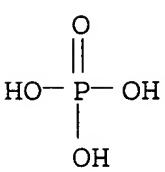
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 67, 75

ST **etching** gallium arsenide indium phosphide; film epitaxial boundary **etching**; anodic oxidn junction epitaxial film

IT **Etching**

(of films boundaries in Group IIIA pnictide epitaxial films)
IT Epitaxy
(of gallium arsenide and indium phosphide, **etching** of interface boundaries after)
IT **Polishing**
(of substrates prior to epitaxy)
IT 107-21-1, Ethylene glycol, uses
(**etchant** contg., for exposure of boundaries in gallium arsenide layers)
IT 87-69-4, Tartaric acid, uses 1310-58-3, Potassium hydroxide, uses 1333-82-0, Chromium oxide (CrO3) **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrogen fluoride**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses 7761-88-8, Silver nitrate, uses 7778-50-9, Potassium dichromate 7783-28-0, Diammonium hydrogen phosphate 13746-66-2, Tripotassium hexacyanoferrate
(**etchant**, for exposure of boundaries in gallium arsenide layers)
IT 1303-00-0, Gallium monoarsenide, miscellaneous 22398-80-7, Indium monophosphide, miscellaneous
(**etching** revelation of boundaries in epitaxial films of)

L27 ANSWER 16 OF 29 HCA COPYRIGHT 2003 ACS on STN
119:261003 Manufacture of electronic parts. Taniguchi, Masaaki; Kaihara, Nobuo; Iwatani, Shoichi; Sasaki, Satoru; Nohara, Takatsugu; Hori, Makoto; Takahashi, Tooru; Kato, Ikuo; Konno, Hisao (Tdk Electronics Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 05190929 A2 19930730 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-21855 19920110.
AB Rough surfaces of substrates comprising grains are **polished**, chem. **etched**, ultrasonically washed, and then electrodes are formed on appropriate parts to give electronic parts. The method is useful in fabrication of devices based on ceramic materials, esp. piezoelecs.
IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(**etching** with, of grain-contg. substrates, in electronic device fabrication)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)

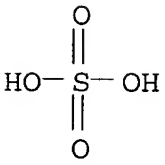


RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

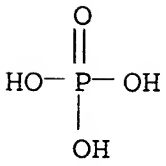
HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L041-02
ICS H01L021-304; H01L041-24
CC 76-14 (Electric Phenomena)
ST piezoelec device **etching**; ceramic elec device **etching**; ultrasonic washing elec device fabrication
IT **Etching**
(of grain-contg. substrates, in electronic device fabrication)
IT 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrofluoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses
(**etching** with, of grain-contg. substrates, in electronic device fabrication)

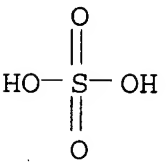
L27 ANSWER 17 OF 29 HCA COPYRIGHT 2003 ACS on STN
118:202706 Increase in RF surface resistance of niobium as a result of acid treatment. Moffat, D.; Barnes, P.; Kirchgessner, J.; Padamsee, H.; Potts, J.; Rubin, D.; Sears, J.; Shu, Q.; Proch, D. (Lab. Nucl. Stud., Cornell Univ., Ithaca, NY, 14853-5001, USA). Conf. Rec. IEEE Part. Accel. Conf., 14th, Volume 4, 2414-16. IEEE: New York, N. Y. (English) 1991. CODEN: 58UUA9.
AB The effect was studied of acid **etching** on the surface resistance Rs of Nb. Reverse electropolishing with its large quantities of generated H drastically increases Rs. This increase is lost on heating at 200-300.degree. due to H desorption. The conditions for H adsorption were detd.
IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrogen fluoride**, uses
7664-93-9, **Sulfuric acid**, uses
(surface resistance of niobium after **etching** with)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)

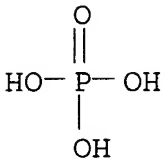


CC 76-1 (Electric Phenomena)
Section cross-reference(s): 66, 67
ST hydrogen adsorption acid **etching** niobium; surface resistance niobium electropolishing acid
IT Adsorption
(of hydrogen on niobium surface from acid **etching**, surface resistance increase from)
IT Acids, uses
(surface resistance of niobium after **etching** with)
IT **Polishing**
(electrochem., of niobium with acids, surface resistance increase from)
IT Electric resistance
(surface, of niobium after **etching** with acids)
IT 50-21-5, Lactic acid, uses **7664-38-2, Phosphoric acid**, uses **7664-39-3, Hydrogen fluoride**, uses **7664-93-9, Sulfuric acid**, uses 7697-37-2, Nitric acid, uses
(surface resistance of niobium after **etching** with)
IT 7440-03-1, Niobium, properties
(surface resistance of, effect of acid **etching** on)

L27 ANSWER 18 OF 29 HCA COPYRIGHT 2003 ACS on STN
106:161523 Manufacture of sintered ceramic articles. Kobayashi, Akihiro; Kobayashi, Kiyomi (Nippondenso Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62036092 A2 19870217 Showa, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-171977 19850805.
AB A sintered conductive ceramic contg. conductive and nonconductive

ceramic materials is electromachined, and the machined surface is **smoothed** by treating with an **etching** agent that dissolves the noncond. material to obtain a sintered ceramic article. Powd. TiN (<0.7 .mu.) is used as the conductive material, Si3N4, SiC, Al2O3, or ZrO2 as the noncond. material, and the wt. ratio of conductive:nonconductive material = 100:(30-70). The **etching** agent is **HF** for Si3N4, alk. soln. for SiC, alk. soln. or **H3PO4** for Al2O3, and **HF** or **H2SO4** for ZrO2. This method is useful for manuf. of articles of complicated shapes, and the articles have high mech. strength.

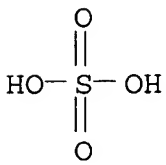
IT **7664-38-2**, uses and miscellaneous
(**etching** by, in chem. machining of alumina ceramics)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3**, uses and miscellaneous
(**etching** by, in chem. machining of silicon nitride and zirconia ceramics)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

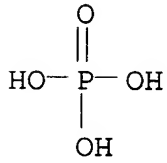
IT **7664-93-9**, uses and miscellaneous
(**etching** by, in chem. machining of zirconia ceramics)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC ICM C04B041-91
CC 57-2 (Ceramics)
IT Alkali metal hydroxides
(**etching** by, in chem. machining of silicon carbide and alumina ceramics)
IT **7664-38-2**, uses and miscellaneous
(**etching** by, in chem. machining of alumina ceramics)
IT **7664-39-3**, uses and miscellaneous

(**etching** by, in chem. machining of silicon nitride and zirconia ceramics)
IT **7664-93-9**, uses and miscellaneous
(**etching** by, in chem. machining of zirconia ceramics)

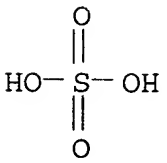
L27 ANSWER 19 OF 29 HCA COPYRIGHT 2003 ACS on STN
105:159334 Methods for treating the surface of strontium titanate single crystals. Kudryashova, G. N.; Lebedev, O. A.; Likholetov, Yu. V.; Smirnova, G. T. (Leningr. Elektrotekh. Inst., Leningrad, USSR). Izvestiya Vysshikh Uchebnykh Zavedenii, Khimiya i Khimicheskaya Tekhnologiya, 29(7), 22-5 (Russian) 1986. CODEN: IVUKAR. ISSN: 0579-2991.
AB The effects were studied of annealing and chem. **polishing** on the surfaces of SrTiO3 (110), (100), and (111) crystal faces. Chem. **polishing** produces an amorphous surface layer. **Etching** in HCl, **H2SO4**, and **H3PO4** solns. does not affect the amorphous layer. **Etching** with an oxalic acid mixt. with H2O2 removes this layer. **Polishing** with a soln. of **H3PO4** and syntanol gives an amorphous-free surface. Annealing at 470-570 K crystallizes the surface.
IT **7664-38-2**, reactions **7664-39-3**, reactions
7664-93-9, reactions
(**etching** of strontium titanate surfaces by)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 75
ST strontium titanate surface chem **polishing**

IT **Etching**
(of strontium titanate, surface from)
IT **Polishing**
(chem., of strontium titanate)
IT 12060-59-2
(**etching** and **polishing** of surfaces of)
IT 7647-01-0, reactions **7664-38-2**, reactions **7664-39-3**, reactions **7664-93-9**, reactions 7697-37-2, reactions
(**etching** of strontium titanate surfaces by)
IT 144-62-7, uses and miscellaneous
(in **polishing** of strontium titanate with hydrogen peroxide soln.)
IT 7722-84-1, uses and miscellaneous
(in **polishing** of strontium titanate with oxalic acid soln.)
IT 12751-48-3
(**polishing** of strontium titanate with **phosphoric acid** and)

L27 ANSWER 20 OF 29 HCA COPYRIGHT 2003 ACS on STN
102:36779 Photomask glass substrates. (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 59172647 A2 19840929 Showa, 2 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-47421 19830322.
AB A mask substrate (e.g., a glass plate) having sharp uneven surfaces on the chamfers for use in the prepn. of a photomask is soaked in an **etching** soln. (e.g., contg. **HF**, **H2SO4**, and **H3PO4**) to form **smooth** uneven surface.
IC G03F001-00; H01L021-30
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST photomask glass substrate **etching**
IT Photomasks
(glass plates for, **smoothening** surface of)
IT Glass, oxide
(photomask with substrate of, **smoothening** surface of)

L27 ANSWER 21 OF 29 HCA COPYRIGHT 2003 ACS on STN
98:151159 Improvement of the **polishing** treatment for niobium surfaces of superconducting cavity resonators. Uzel, Y.; Schnitzke, K.; Krause, N. (Res. Lab., Siemens A.-G., Erlangen, D-8520, Fed. Rep. Ger.). Applied Physics A: Solids and Surfaces, A30(3), 185-7 (English) 1983. CODEN: APSFDB. ISSN: 0721-7250.
AB For superconducting cavities made from Nb sheet, which are interesting in the field of accelerator applications, **smooth** and defect free inner surfaces are needed to achieve a high unloaded Q along with high accelerating field strength. These can be obtained by using chem. **polishing** procedures. Whereas normally a mixt. of **HF**, HNO3, and **H3PO4** is applied, the known bath contg. **HF**, HNO3, and **H2SO4** was chosen > 50. The surface quality was judged by visual inspection by using a light microscope as well as by microwave

measurements of 1 spherical resonator. The new method gave less grain boundary **etching** and, with high field levels, an enlarged unloaded Q.

CC 71-1 (Nuclear Technology)
Section cross-reference(s): 77

ST niobium superconducting surface; **polishing** niobium superconducting surface

IT Superconductors
(niobium, **polishing** of surface of)

IT **Polishing**
(of niobium superconducting cavity resonator surface)

IT Accelerators
(superconducting niobium cavity resonator for, **polishing** of surface of)

IT 7440-03-1, properties
(superconducting cavity resonator, **polishing** of surface of)

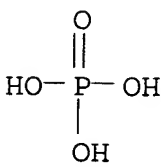
L27 ANSWER 22 OF 29 HCA COPYRIGHT 2003 ACS on STN

83:64754 Electrolytically **polished** indium for glass-to-metal seals. Ohyama, Takamasa (Sony Corp., Japan). Jpn. Tokkyo Koho JP 50003249 B4 19750201 Showa, 4 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1966-40504 19660622.

AB In or In alloys are electrolytically **polished** in 30% HNO3 at 10-50.degree. and c.d. of 0.5-3.0 A/cm2 for 1-2 sec. The oxide layer formed during the treatment is removed in a pickling bath contg. .ltoreq.50% HNO3, **H2SO4**, HCl, **HF**, and/or **H3PO4** at 10-40.degree. for 1-10 sec. The treated In has a high affinity for glass.

IT **7664-38-2**, reactions **7664-39-3**, reactions **7664-93-9**, reactions
(**etching** of indium with, for glass-metal seals for television tubes)

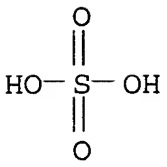
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



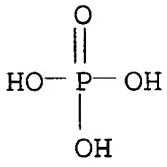
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



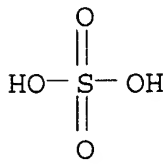
IT **7664-38-2**, reactions **7664-39-3**, reactions
7664-93-9, reactions
(pickling of indium with, for glass-metal seals)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IC C25F; H01J
CC 56-5 (Nonferrous Metals and Alloys)
IT **Polishing**
(electrolytic, of indium, for glass-to-metal seals in television tubes)
IT Seals (mechanical)
(glass-metal, electrolytically **polished** indium for, for television camera tubes)
IT Seals (mechanical)
(indium for glass-metal, electrolytically **polished**)
IT **Etching**
(of indium, for glass-metal seals for television camera tubes)
IT Glass
(sealing to metal, electrolytic **polished** indium for, for television camera tubes)
IT Glass

(sealing to metals, electrolytically **polished** indium for)
IT Cameras
(television, electrolytically **polished** indium for glass-metal seals for)
IT Metals, uses and miscellaneous
(uniting of, to glass, electrolytically **polished** indium for)
IT 7697-37-2, reactions
(electrolytic **polishing** and **etching** of indium with, for glass-metal seals for television camera tubes)
IT 7440-74-6, reactions
(electrolytic **polishing** and **etching** of, for glass-metal seals for television camera tubes)
IT 7440-74-6, reactions
(electrolytic **polishing** of, for glass-metal seals)
IT 7647-01-0, reactions **7664-38-2**, reactions **7664-39-3**, reactions **7664-93-9**, reactions
(**etching** of indium with, for glass-metal seals for television tubes)
IT 7647-01-0, reactions **7664-38-2**, reactions **7664-39-3**, reactions **7664-93-9**, reactions
(pickling of indium with, for glass-metal seals)
IT 7697-37-2, reactions
(**polishing** of indium electrolytically with, for glass-metal seals)

L27 ANSWER 23 OF 29 HCA COPYRIGHT 2003 ACS on STN
76:146771 Correction of: earlier abstract. Chemical surface treatment of single-crystal wafers, especially of semiconductor materials. Heise, Siegbert; Obernik, Hartwin; Preschel, Guenter Ger. (East) DD 80784 19710320, 3 pp. (German). CODEN: GEXXA8. APPLICATION: DD 19700318.
AB The wafers were 1st subjected, at room temp., to a mixt. of liq. **etchants** while mounted on a rotating carrier disk of a mech. **polishing** machine, thus producing uniform removal of semiconductor material without preference of any crystal direction. This was followed by **etching** in a gas mixt. at much higher temp. In the case of Si, the 1st **etching** was done with a mixt. of HNO3, **HF**, **H2SO4**, and **H3PO4**.
The 2nd **etching** was done at 1200.degree. in a H-HCl mixt.
This was followed by epitaxial treatment in SiCl4 doped with PCl3.
Correction of CA 76:91981d.
IC H01L
CC 71 (Electric Phenomena)
ST semiconductor **etching** two stage; silicon **etching** two stage
IT **Polishing**
(chem., of silicon substrates for epitaxy)
IT **Etching**
(of silicon, for substrates for epitaxy)
IT Epitaxy

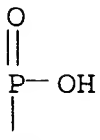
(silicon substrates for, **polishing** and **etching** of)
IT 7440-21-3, reactions
(**polishing** and **etching** of, for substrates for epitaxy)

L27 ANSWER 24 OF 29 HCA COPYRIGHT 2003 ACS on STN
75:113411 Cadmium oxide crystals studied by chemical **etching**.
Krylova, E. O.; Dlugach, L. B.; Ivanov, G. A.; Savitskaya, Ya. S. (Inst. Radiotekh. Elektron., Moscow, USSR). Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy, 7(7), 1268-9 (Russian) 1971. CODEN: IVNMAW. ISSN: 0002-337X.
AB **Etching** of CdO crystals grown by a previously described technique (I., et al., 1969) was studied. Based on exptl. data on **etching** of CdO crystals in inorg. acids (**HF**, **H3PO4**, HCl, HNO3, and **H2SO4**) and their mixts., a 9% HCl soln. at room temp. gives the best results with regard to selective **etching** of CdO crystals. The **etching** rate is 0.4 .mu./sec. CdCl2, impurity, forming a slightly sol. compd. with the material, appears in the soln. during **etching**. This could be assocd. with the capability of Cd halides to form complexes of the Cd[CdCl3]2 type even in very dil. solns., which, in turn, markedly decreases the concn. of the Cd2+ ions. In the given **etchant**, faceted **etch** figures were obtained on the (110) and (111) faces and had the shape of trigonal prisms for the (110) and trigonal pyramids for the (111) faces, which reflect the symmetry of the given faces. **Etch** figures were not obsd. on the (100) faces. The **etch** figures correspond to dislocations and not to point defects. The dislocation **etch** pit d. on the (110) face was 104 cm-2, and that on the (111) face, 103 cm-2. The higher dislocation d. on the (110) faces may be due to the higher supersatn. rates here, i.e. to higher growth rates. The best **polishing** **etchant** for CdO crystals was a 0.5M soln. of K2Cr2O7 in 16N **H2SO4**. The **etching** rate of CdO crystals in this **etchant** was 4.2 .mu./sec.
CC 70 (Crystallization and Crystal Structure)
ST cadmium oxide crystals **etching**
IT **Etching**
Polishing
(of cadmium oxide)
IT 1306-19-0
(**etching** of)

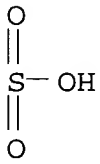
L27 ANSWER 25 OF 29 HCA COPYRIGHT 2003 ACS on STN
65:79206 Original Reference No. 65:14772f-g **Etchant** development for thoria fuels. Halva, C. J.; Dodd, R. H.; Dewell, E. H. (Babcock & Wilcox Co., Lynchburg, VA). AEC Accession No. 7487, Rept. No. BAW-291, 12 pp. Avail. Dep. mn; CFSTI $1.00 cy From: Nucl. Sci. Abstr. 20(5), 939(1966). (English) 1965.
AB Studies were made on **etchants** that could be used to bring out the crystal boundaries of thoria-urania polycryst. materials in

sufficient detail for photomicrographic study. The **etchants** tested were mineral acids and mixts. of **HF** and **H3PO4**, **HF** and HNO3, and **H2SO4**-H2O2. A procedure is recommended that consists of abrasive **polishing** steps followed by a high-temp. **etch** with **H3PO4** that contains catalytic quantities of fluoride.

IT **7664-38-2, Phosphoric acid**
(**etching** of ThO2-U oxide solid soln. by **Hf** and)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **7664-93-9, Sulfuric acid**
(**etching** of ThO2-U oxide solid soln. by H2O2 and)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3, Hydrofluoric acid**
(thorium oxide (ThO2)-U oxide solid soln. **etching** by HNO3 or **H3PO4** and)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

CC 13 (Nuclear Technology)
IT Fluorides
(catalysts, in ThO2-U oxide **etching** with **H3PO4**)
IT Reactors, nuclear
(fuels or fuel elements, ThO2-U oxide solid soln., **etching** by mineral acids)
IT Catalysts and Catalysis
(in **etching** of ThO2-U oxide solid soln. by **H3PO4**, fluoride as)
IT **Polishing**
(of thorium oxide (ThO2) solid soln. with U oxide)

IT **Etching**
(of thorium oxide (ThO2) solid soln. with U oxide by mineral acids)
IT Uranium oxide
(solid solns. with ThO2, **etching** by mineral acids)
IT **7664-38-2, Phosphoric acid**
(**etching** of ThO2-U oxide solid soln. by **Hf** and)
IT **7664-93-9, Sulfuric acid**
(**etching** of ThO2-U oxide solid soln. by H2O2 and)
IT 7722-84-1, Hydrogen peroxide
(**etching** of thorium oxide(ThO2)-U oxide solid soln. by **H2SO4** and)
IT 1314-20-1, Thorium oxide, ThO2
(solid solns. with U oxide, **etching** by mineral acids)
IT **7664-39-3, Hydrofluoric acid**
(thorium oxide (ThO2)-U oxide solid soln. **etching** by HNO3 or **H3PO4** and)

L27 ANSWER 26 OF 29 HCA COPYRIGHT 2003 ACS on STN
50:87762 Original Reference No. 50:16473g-i Plating on unusual metals.
Faust, Charles L.; Beach, John G. (Battelle Memorial Inst., Columbus, O.). Plating (Paris), 43, 1134-42 (Unavailable) 1956.
CODEN: PTEPAP. ISSN: 0370-2162.
AB Methods are given for the activation and plating on Be, Zr, Nb, Bi, and Inconel, and for the diffusion bonding of deposits on these metals. Be can be activated in 5% **H2SO4**, then given a Zn immersion coating or plated directly after an anodic pickle for 2 min. at 25.degree. and 100 amp./sq.ft. in 10% **H3PO4**-2% HCl soln. followed by a 2-min. pickle in concd. HNO3. Zr can be chemically **polished** in a soln. contg. NH4F.**HF** 100 g./l., HNO3 400 ml./l., and H2SiF6 200 ml./l. It can be **etched** in NH4FHF solns. with molar ratio ranges from 1-2 to 4-1 at 40.degree. for 1-3 min. An immersion Zn plate can be formed by dipping for one min. in molten ZnCl2 at 450.degree.. Nb is activated by an a.-c. **etch** at 1-5 v. for 1-3 min. in concd. **HF**, followed by a few-sec. dip in 50 vol.% HNO3 soln. contg. 2% **HF**. Mo is activated by a 1-min. dip in a soln. contg. KOH 100 and K3Fe(CN)6 300 g./l. followed by a dip in 15% HCl. Bi is activated in 10% HCl. Inconel is activated by anodic treatment for 1-4 min. in 7N **H2SO4** at 200 amp./sq.ft. and cathodic treatment in it for 15 sec. at 50 amp./sq.ft., followed by a strike in a Woods Ni bath.
CC 4 (Electrochemistry)
IT **Polishing**
(of zirconium)

L27 ANSWER 27 OF 29 HCA COPYRIGHT 2003 ACS on STN
47:603 Original Reference No. 47:83i,84a The meaning of **etching** patterns on **etched** and **polished** aluminum.
Polityćki, A.; Fisher, H. (Siemens & Halske A.-G. Karlsruhe, Germany). Zeitschrift fuer Elektrochemie und Angewandte

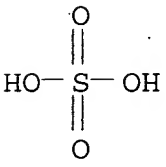
Physikalische Chemie, 56, 326-30 (Unavailable) 1952. CODEN: ZEAPAA. ISSN: 0372-8323.

AB Conditions leading to the appearance of the specific **etching** pattern of Al (cubooctahedrons), predicted by the theory, were investigated. Various concns. of **HF**, HCl, HBr, and HI on one hand, and a mixt. of H3PO3, **H2SO4**, HNO3 (chem. **polishing**) on the other hand, were used to produce **etching** patterns which were examd. with an electron microscope. The photographs (reproduced in the article) show that the cubooctahedrons appear only in the case of HI, the only reagent preventing the formation of the oxide film. In the case of the other halogen acids one obtains pseudopyramids characteristic of the oxide films, which prevent the direct contact of ions with the metal surface. Chem. **polishing** induces a thick porous film which does not develop crystal patterns.

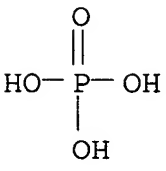
IT **7664-39-3, Hydrofluoric acid**
(aluminum **etching** with)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT **7664-93-9, Sulfuric acid**
(mixts. of, with HNO3 and **H3PO4**, Al **etching** with)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-38-2, Phosphoric acid**
(mixts. of, with **H2SO4** and HNO3, Al **etching** with)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



CC 9 (Metallurgy and Metallography)
IT **Etching**
(of aluminum, patterns from)

IT 7647-01-0, Hydrochloric acid **7664-39-3**, **Hydrofluoric acid** 10034-85-2, Hydriodic acid 10035-10-6, Hydrobromic acid
(aluminum **etching** with)
IT 7429-90-5, Aluminum
(**etching** of, patterns from)
IT **7664-93-9**, **Sulfuric acid**
(mixts. of, with HNO3 and **H3PO4**, Al **etching** with)
IT **7664-38-2**, **Phosphoric acid**
(mixts. of, with **H2SO4** and HNO3, Al **etching** with)
IT 7697-37-2, Nitric acid
(mixts. of, with **H3PO4** and **H2SO4**, Al **etching** with)

L27 ANSWER 28 OF 29 HCA COPYRIGHT 2003 ACS on STN
46:14219 Original Reference No. 46:2465c-e Chemical brightening of aluminum and light alloys. Aid to metallography with industrial applications. Herenguel, J. (Soc. Trefileries et Laminoirs Havre, Antony, Fr.). Metal Treatment (London), 18, 539-42 (Unavailable) 1951. CODEN: METMAL. ISSN: 0368-9549.
AB Electropolishing solns. described include the acetic-perchloric baths, brytal-alk.-type baths, **phosphoric-sulfuric acid** baths, **sulfuric-hydrofluoric**, chromic-**hydrofluoric** or fluoboric **acid** baths. Chem. **polishing** solns. studied include alk. baths of the concd. NaOH type with addns. of oxidizing agents such as nitrates, and acid baths of the type previously mentioned. Two kinds of **polishing** attack occur, namely, attack with copious evolution of gas and attack under viscous layer. The bath compns. listed are suitable for the prepn. of the various Al alloys for microexamn. Their use generally makes possible clearer images than with electrolytic **polishing**, particularly for multiphase alloys. Other compns. produce an "**engraved**" pattern which is a function of the crystallographic orientation. It is also possible with this kind of a reagent to retrace the boundaries of the original cast grains even after a no. of recrystns. due to rolling and annealing.
CC 9 (Metallurgy and Metallography)
IT **Polishing**
(of aluminum and light alloys)
IT Metallography
(**polishing** for, of light alloys)
IT Aluminum alloys
(**polishing** of)
IT 7429-90-5, Aluminum
(**polishing** of)

L27 ANSWER 29 OF 29 HCA COPYRIGHT 2003 ACS on STN
39:20614 Original Reference No. 39:3241h-i,3242a-b Colored designs on stainless steel. Batcheller, Clements US 2375613 19450508

(Unavailable). APPLICATION: US .
AB The surface of the steel contg. 6 or more % Cr is finished by conventional methods, i.e., pickling, cold rolling, belt sanding, or **polishing** and is then colored by forming a coat of metallic oxides. This is carried out at a temp. of 170.degree. to 220.degree.F. in a 40% **H2SO4** bath contg. an **etching** inhibitor and the oxidizing agent. Such color-imparting agents are chromates and dichromates of Al, NH4, Ba, Bi, Cd, Ca, Co, Cu, Fe, Pb, Li, Mg, Hg, Ni, K, Na, Sr, or Zn, the vanadates or metavanadates of NH4, K, Na, or the corresponding acids, and the manganates or permanganates of the alkali and alk. earth metal groups. Their concn. in soln. ranges from 4 to 25 parts by wt. The treatment period is from 15 to 30 min. The design which is to be **imprinted** is painted with a resist, such as common paint, lacquer, varnish, or a printing or lithographic ink. The free portions of the surface are then cleared by electrolysis in solns. of (a) HNO3 10 and **HF** 5%, (b) NaNO3 75 g. per l., or (c) a soln. contg. **H3PO4** 70 and **H2SO4** 30% with some citric acid at temps. of 50.degree. to 100.degree. by using a current of 1 to 1.1 amp. per each sq. in. of film to be removed for 20 sec. Cf. C.A. 35, 1021.8, 5453.1; 36, 61334.
CC 9 (Metallurgy and Metallography)

=> d his l28-

FILE 'HCA' ENTERED AT 11:27:22 ON 14 AUG 2003
L28 161944 S ANISOTROP?
L29 10 S L28 AND L10
L30 8 S L29 NOT (L26 OR L27)

=> d l30 1-8 ti

L30 ANSWER 1 OF 8 HCA COPYRIGHT 2003 ACS on STN
TI Elastic surface wave components having stress migration-resistant contacts and fabrication of components thereof

L30 ANSWER 2 OF 8 HCA COPYRIGHT 2003 ACS on STN
TI Lens fiber coupler assembly and its production thereof

L30 ANSWER 3 OF 8 HCA COPYRIGHT 2003 ACS on STN
TI Solution and method for wet etching

L30 ANSWER 4 OF 8 HCA COPYRIGHT 2003 ACS on STN
TI Nickel-cobalt-boron alloy deposited on a substrate

L30 ANSWER 5 OF 8 HCA COPYRIGHT 2003 ACS on STN
TI Patterning GaInP/GaAs layers, and fabrication of heterojunction bipolar transistors using these layers

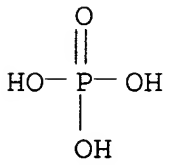
L30 ANSWER 6 OF 8 HCA COPYRIGHT 2003 ACS on STN
TI Manufacture of fibers from liquid crystals of cellulose derivatives

L30 ANSWER 7 OF 8 HCA COPYRIGHT 2003 ACS on STN
TI Synthetic fibers from cellulose derivative liquid crystals

L30 ANSWER 8 OF 8 HCA COPYRIGHT 2003 ACS on STN
TI Spangle finish on aluminum

=> d l30 3,5 cbib abs hitstr hitind

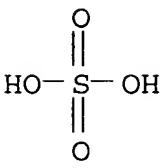
L30 ANSWER 3 OF 8 HCA COPYRIGHT 2003 ACS on STN
131:294241 Solution and method for wet etching. Honma, Koji (Chemitronics K. K., Japan). Jpn. Kokai Tokkyo Koho JP 11286791 A2 19991019 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-126607 19980401.
AB Etchants, and optionally fine-grain particles, are encapsulated to give the title solns. The etchant may be solid, liq., or their mixts. Use of the solns. or tapes having adhered the capsules in wet etching are also claimed. Semiconductor crystals, metals, insulators, etc. are **anisotropically** etched by breaking the capsules by collision of the capsules on the substrate surface. Etching is carried out with very small amt. of etchant by the tape process.
IT **7664-38-2**, **Phosphoric acid**, uses
7664-39-3, **Hydrofluoric acid**, uses
7664-93-9, **Sulfuric acid**, uses
(wet etching of materials with encapsulated etchants)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

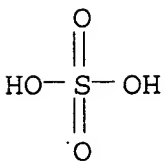
HF

RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)

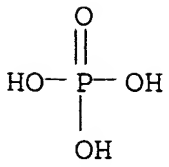


IC ICM C23F001-14
ICS H01L021-306; H01L021-308
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 55, 56
ST etchant encapsulation **anisotropic** etching; semiconductor device fabrication encapsulated etchant
IT 7647-01-0, Hydrochloric acid, uses **7664-38-2**, **Phosphoric acid**, uses **7664-39-3**, **Hydrofluoric acid**, uses **7664-93-9**, **Sulfuric acid**, uses 7697-37-2, Nitric acid, uses
(wet etching of materials with encapsulated etchants)

L30 ANSWER 5 OF 8 HCA COPYRIGHT 2003 ACS on STN
121:243538 Patterning GaInP/GaAs layers, and fabrication of heterojunction bipolar transistors using these layers. Fan, Shou-Kong; Fan, Shou-kong; Henderson, Timothy S.; Hill, Darrell G. (Texas Instruments Inc., USA). U.S. US 5330932 A 19940719, 9 pp. (English). CODEN: USXXAM. APPLICATION: US 1992-999072 19921231.
AB In 1 form of the invention, a method is disclosed for the removing of successive layers of GaAs and GaInP comprising the steps of: performing an **anisotropic** reactive ion etch on the GaAs layer and performing an isotropic wet etch on the GaInP layer, whereby a mesa formed as a result of the reactive ion etch and the wet etch has substantially vertical sidewalls; GaInP/GaAs structures having dimensions of .ltorsim.3.0 .mu.m may be fabricated. A heterojunction bipolar transistor is manufd., using the GaAs as an emitter cap layer and the GaInP as the emitter layer.
IT **7664-93-9**, **Sulfuric acid**, reactions
(etching by, of gallium arsenide)
RN 7664-93-9 HCA
CN Sulfuric acid (8CI, 9CI) (CA INDEX NAME)



IT **7664-38-2**, **Phosphoric acid**, reactions
(etching by, of gallium indium phosphide)
RN 7664-38-2 HCA
CN Phosphoric acid (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **7664-39-3, Hydrogen fluoride**, reactions
(reactive ion etching by, of gallium arsenide)
RN 7664-39-3 HCA
CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IC ICM H01L021-20
ICS H01L021-306
NCL 437133000
CC 76-3 (Electric Phenomena)
IT **7664-93-9, Sulfuric acid**, reactions
7722-84-1, Hydrogen peroxide, reactions
(etching by, of gallium arsenide)
IT 7647-01-0, Hydrogen chloride, reactions **7664-38-2, Phosphoric acid**, reactions
(etching by, of gallium indium phosphide)
IT 2551-62-4 **7664-39-3, Hydrogen fluoride**, reactions 10294-34-5, Boron chloride (BCl3)
(reactive ion etching by, of gallium arsenide)